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Transpower's individual price-quality path for the next regulatory control period

Issues paper

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Associated documents

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13 December 2023	ISBN 978-1-991085-64-1	Context and summary of Final decisions – Part 4 Input Methodologies Review 2023
13 December 2023	ISBN 978-1-991085-65-8	Report on the IM Review 2023 – Part 4 Input Methodologies Review 2020 – Final decision
13 December 2023	ISBN 978 – 1-991085-68-9	Transpower investment topic paper – Part 4 Input Methodologies Review 2023 – Final decision
13 December 2023	ISSN 1178-2560 [2023] NZCC 38	Transpower Input Methodologies (IM Review 2023) Amendment Determination 2023
13 December 2023	ISSN 1178-2560 [2023] NZCC 39	Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023
13 December 2023	xlsx download	Part 4 IM Review 2023 Transpower investment topic paper ACA accounting guidance for Transpower's Anticipatory Connection Asset (ACA) capacity
9 October 2023	ISBN 978-1-991085-44-3	Our process, framework and approach for setting Transpower's expenditure allowances, quality standards and individual price-quality path for 2025 to 2030

Commerce Commission
Wellington, New Zealand

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Executive summary

Background

X1 Our vision is that New Zealanders are better off because markets work well, and consumers and businesses are confident market participants. In markets with little or no competition, regulation can help create similar outcomes to those experienced in competitive markets.

X2 Where there is no competition (monopolies), businesses should expect a reasonable return on investments, and short-term rewards for good performance. Equally, excessive profits should be limited, poor performance penalised, and businesses held to account when things go wrong that could, and should, have been avoided.

X3 Transpower is the sole owner and operator of New Zealand's transmission network. Its role is to ensure electricity is transported from generators to some large electricity users and distribution businesses that deliver it to homes and businesses. Transpower is responsible for building, maintaining, and operating this transmission network.

X4 Under Part 4 of the Commerce Act 1986 (the **Act**), the Commerce Commission is responsible for setting the maximum revenue Transpower can recover from consumers to run the transmission network efficiently,[1] along with quality standards,[2] performance incentives,[3] the term of the regulatory period,[4] and price-quality path compliance.[5]

X5 Since 1 April 2011, Transpower has been regulated by way of individual price-quality regulation. The individual price-quality path (**IPP**) governs Transpower's revenues for each pricing year, with the paths being reset every 5 years.[6]

X6 Transpower's present individual price-quality path was reset for the 2020-2025 regulatory period on 14 November 2019, and we are now starting the process of setting Transpower's IPP for the next regulatory period starting in 2025.

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1 Commerce Act 1986, section 53M(1)(a).
2 Commerce Act 1986, section 53M(3).
3 Commerce Act 1986, section 53M(2).
4 Commerce Act 1986, section 53M(4).
5 Commerce Act 1986, section 53N.
6 Our working assumption is that a five-year term for RCP4 is likely to apply. We will be considering whether any variation from this should be made to better meet the Part 4 purpose: Commerce Act, section 53M(4)-(5).

Purpose of this paper

X7 We are in the process of setting Transpower's maximum revenue allowances and quality standards, as part of determining Transpower's IPP for the next regulatory control period (**RCP**), to apply from 1 April 2025 to 30 March 2030 (**RCP4**).[7]

X8 On 21 November 2023 Transpower published its RCP4 proposal, which describes how it will operate, maintain and invest in the electricity transmission network.[8] Alongside this proposal, Transpower also submitted a report from GHD Advisory and Castalia (the **Verifier**) setting out an independent verification opinion on Transpower's RCP4 proposal.[9]

X9 In assessing Transpower's proposal, we are guided by whether the proposal is consistent with an expenditure outcome which represents the efficient costs of a prudent supplier of electricity transmission services.[10] This concept is consistent with the purpose of Part 4 of the Commerce Act 1986 (**Part 4**), which is also a required consideration under the capital expenditure (capex) evaluation criteria in the Transpower Capital Expenditure Input Methodology (**Capex IM**).[11]

X10 In applying this concept, we consider that a 'prudent supplier' is a supplier whose planning and performance standards reflect Good Electricity Industry Practice (**GEIP**). A useful definition of GEIP, in relation to electricity transmission services, is found in the Electricity Industry Participation Code 2010 (**Code**).[12]

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7 Our working assumption is that a five-year term for RCP4 is likely to apply. We will be considering whether any variation from this should be made to better meet the Part 4 purpose: Commerce Act, section 53M(4)-(5).

8 Transpower New Zealand Limited "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023); and additional supporting material available at: https://www.transpower.co.nz/our-work/industry/regulation/rcp4/our-proposed-five-year-workplan.

9 GHD Advisory and Castalia "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023).

10 Commerce Commission "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), pages 25-28.

11 *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023* [2023] NZCC 39, (13 December 2023)", clause 6.1.1(2) and 6.1.1(3).

12 'Good electricity industry practice' is defined in Part 1 of the Code as: **good electricity industry practice** in relation to transmission, means the exercise of that degree of skill, diligence, prudence, foresight and economic management, as determined by reference to good international practice, which would reasonably be expected from a skilled and experienced **asset** owner engaged in the management of a transmission network under conditions comparable to those applicable to the **grid** consistent with applicable law, safety and environmental protection. The determination is to take into account factors such as the relative size, duty, age and technological status of the relevant transmission network and the applicable law.

X11 This Issues paper outlines the context for RCP4, the issues we consider relevant and the ways we propose to apply our regulatory tools within the IPP to promote the long-term benefit of consumers.

Transpower's proposed RCP4 expenditure uplift and revenue increase drivers

X12 Transpower has proposed:[13]

X12.1 a 32% increase in capital expenditure (**capex**), from $1,698.9 million over regulatory control period 3 (**RCP3**) to $2,250.2 million over RCP4 (constant $ 2022/2023); and

X12.2 a 20% increase in operating expenditure (**opex**), from $1,632.6 million over RCP3 to $1,957.6 million over RCP4 (constant $ 2022/23).

X13 Transpower states that the expenditure uplift is largely reflective of transmission assets reaching their end-of-life, increased workforce requirements to deliver the work programme, resilience expenditure, and cost pressures related to materials and equipment.[14]

X14 Transpower's proposed RCP4 revenue, is shown in Figure X.1, and illustrates the change in its proposed revenue over RCP4 ($5,896 million) when compared to RCP3 ($4,043 million), and the various components that affect that proposed revenue increase. [15] This includes increases due to new investment and external factors such as the return on capital and CPI.[16]

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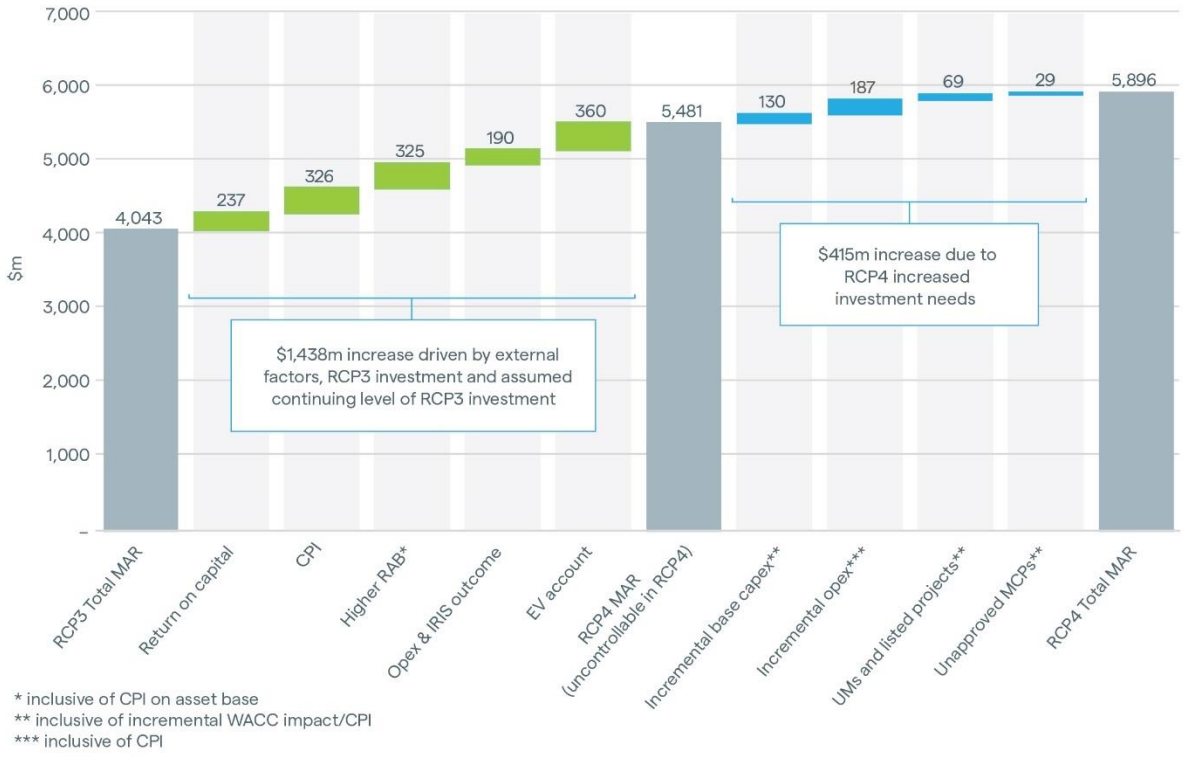
[13] Transpower New Zealand Limited "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 2.1, page 8.

[14] Transpower New Zealand Limited "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 4.2, page 32.

[15] Please note, the $5,896 million proposed revenue includes IM Review decisions such as RAB indexation for Transpower (see Commerce Commission, "*Financing and incentivising efficient expenditure during the energy transition topic paper – Part 4 Input Methodologies Review 2023 – Final decision*", (13 December 2023), Chapter 3.). Other IM Review 2023 decisions can be found at https://comcom.govt.nz/regulated-industries/input-methodologies/input-methodologies-for-electricity-gas-and-airports/input-methodologies-projects/2023-input-methodologies-review?target=documents&root=337609

[16] Transpower New Zealand Limited "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 12.4, page 215.

Figure X1 Smoothed RCP4 revenue forecast with an indexed RAB[17]



X15 In its RCP3 proposal, Transpower signalled the RCP4 revenue increase, noting that it expected the near-term forecast for asset replacements and renewals over RCP3 to be relatively stable, but it anticipated a significant uplift in investment over RCP4 and beyond, due to asset age and condition issues.

X16 Increases in interest rates and inflation since we set the price-quality path for RCP3 are also driving the increase in Transpower's proposed revenue. Transpower is forecasting a higher interest rate and a higher regulated cost of capital of 7.17% in this price-quality path reset, versus the cost of capital of 4.57% which applied over RCP3.[18] Transpower forecasts the RCP4 revenue in real terms to be similar to the allowed revenue in regulatory control period 2 (**RCP2**), when interest rates were at a similar level.[19]

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[17] Transpower New Zealand Limited "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 12.4, page 215.

[18] A change in the cost of capital has a significant impact, as this determines the allowed rate of return for Transpower on the value of assets in its regulated asset base.

[19] Transpower New Zealand Limited "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 2.7, page 18.

X17 High inflation is affecting most national economies, increasing input costs for many businesses. At the same time, with the drive to decarbonise fossil fuel-based energy users through electrification, and the connection of new renewable generation assets, the demand for transmission assets is also increasing. This is inflating costs for Transpower to deliver the transmission required to enable increased electrification load.

Verifier's review of Transpower's initial RCP4 proposal

X18 The Verifier has reviewed the majority of Transpower's initial proposed opex and base capex. Overall, the verifier found that the proposed expenditure which they reviewed and verified, represents the efficient costs of a prudent transmission service provider, having regards to GEIP.[20]

X19 The Verifier reviewed:[21]

X19.1 $1,797.3 million of Transpower's RCP4 initial proposed opex and verified it as proposed.

X19.2 $1,933.2 million of Transpower's initial base capex proposal of $2,001.4 million and verified 93.6% of this expenditure.

X19.3 $526.3 million of uncertainty mechanism capex and verified it. This included use-it-or-lose-it (**UIOLI**) funding for resilience and customer electrification, and potential listed project capex over RCP4 that Transpower must apply for separately at a later date.

X20 In verifying this expenditure, the Verifier noted that its role was not to provide an opinion on the suitability of the uncertainty mechanisms.

X21 The Verifier identified a number of areas where we should focus our attention when we carry out our review of the base capex proposal. Those areas include:

X21.1 Transpower's ability to secure and retain the specialised workforce resource required to deliver the RCP4 work programme;

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[20] Note that since verification Transpower has modified its RCP4 proposal in a number of areas in response to the verifier report and also as it has further developed its understanding of funding needs.

[21] GHD Advisory and Castalia, "Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd", (12 September 2023), page ii.

X21.2 the appropriateness of the revenue-based materiality threshold test for the regulatory change event reopener driven by potential Resource Management Act changes;[22]

X21.3 performing cross-checks on Transpower's productivity forecast figure; and

X21.4 design features relating to the implementation of Transpower's proposed use-it-or-lose-it (**UIOLI**) uncertainty mechanisms.

Our identified focus areas

X22 We have undertaken an initial review of Transpower's RCP4 proposal and the associated independent verification report and have identified a number of issues that we would like your views on.

X23 In addition to the issues raised by the Verifier, we have identified areas where we consider further investigation is required, or additional information from Transpower is necessary, before we can make our decisions.

X24 We discuss the key focus areas that will form the basis of our review, and discuss our preliminary assessment of the proposal and verification report in each chapter of this Issues paper. In some cases, we have already sought additional information from Transpower using a voluntary request for information (**RFI**) process to enable us to do that work.

Asset management

X25 Transpower has made significant progress in its understanding of asset health and risk modelling since RCP2. This progress has largely been in response to the RCP3 Verifier recommending Transpower mature this understanding, which we agreed with in our RCP3 decision. Mature asset health and risk modelling ensures that Transpower is targeting replacement and refurbishment of the right assets at the right time.

X26 Our investigation of Transpower's RCP4 capex proposal, and the asset health and risk modelling that underpins it, will focus on how Transpower has tested its asset health models against observed condition data, the use of failure rate data, and other model inputs it has used, such as safety risk and resilience.

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[22] In the 2023 IM Review we amended the regulatory change event reopener threshold for Transpower from "at least 1% of the aggregate amount of the forecast MARs for the disclosure years in which the net costs are or will be incurred" to "additional reasonable costs (whether capex, opex, or both) to respond to the changed requirement that exceed $5 million" – *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023* [2023] NZCC 38, cl. 3.7.5(2)(a).

Quality standards and performance measures

X27 Transpower is proposing modifications to, and removal of, some existing grid output measures (quality standards and performance measures) set in RCP3, and the addition of new measures for RCP4. Transpower states that these changes reflect the views of customers and stakeholders, following consultation.[23]

X28 Our review of Transpower's proposed grid output measures will focus on the key changes to the existing measures and their implications from a consumer and regulatory perspective. Some measures may not be useful to stakeholders but may support our role in monitoring the quality of service provided.

X29 We are particularly interested in your views of Transpower's proposal to remove the asset performance measure 2 (**AP2**) quality standard, which measures the percentage of time selected HVAC assets are available, and to remove the outage impact of planned major projects from the AP2 measure. The quality standard has been in place since RCP1 and has not been met for several of the reporting years.[24]

X30 Transpower also proposes to extend the asset classes that the asset health measures would apply to but is proposing that these are not linked to quality standards. Our preliminary view is that the RCP3 asset health quality standards should be extended, based on the maturity of the asset health modelling that has been reviewed by both the expert opinion, during RCP3, but also the RCP4 Verifier. We will be guided by these reviews if we decide to extend the asset health measure quality standards in this reset.[25]

X31 Most other grid output measure changes proposed by Transpower are minor, apart from its proposal to remove grid performance measure GP-M. It has also introduced some new measures to gauge its customer service performance, and a measure that reports on unserved energy at demand grid exit points.

X32 We are interested in your views on Transpower's proposed grid output measure changes.

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[23] Transpower's Service Measures consultation process documentation is available at: https://www.transpower.co.nz/our-work/industry/regulatory-control-periods/rcp4/service-measures-refresh.

[24] For more information on AP2 quality standard breaches, investigations, and findings, see GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), pages 463-467.

[25] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023).

Capex

X33 Over RCP3, Transpower has been progressing its asset health and risk modelling for a range of asset classes, and many of these are now in a mature state and can be relied upon to adequately inform the expenditure forecasts. In asset classes where asset health model maturity is low, we will be guided by the Verifier recommendations in our review of the capex proposal.

X34 Although the Verifier has verified the majority of Transpower's replacement and refurbishment expenditure, our level of our scrutiny, while remaining proportionate, will likely be greater for those expenditure categories derived from less mature models.

X35 In its proposal, Transpower intends to address much of the resilience risk it has identified using its proposed use-it-or-lose-it (**UIOLI**) uncertainty mechanism. We are interested in how Transpower is approaching resilience and will be exploring how it is identifying and quantifying major event risk, and the economic justification for proposed mitigation measures.

X36 We will also be reviewing Transpower's proposed $100 million UIOLI customer electrification fund, particularly the $75 million allocated for the bringing forward of connection asset replacements, formerly subject to new investment contracts (**NIC**).

X37 We will investigate whether the ICT TransGo project capex, which is 47% of proposed ICT capex, should be subject to the base capex low incentive rate of 15% as proposed by Transpower, or the standard base capex incentive rate, due to the project cost uncertainty noted by Transpower in its proposal.

X38 Finally, we will review the unreviewed/unverified capex allocated for capitalised leases and carry out a top-down review of the unreviewed/unverified capex in the information and communications technology (**ICT**) capex category.

Opex

X39 Following our review of the verification report, and our preliminary review of the proposal, we have identified key focus areas that will help us assess whether Transpower's proposed opex represents a prudent and efficient level of opex.

X40 We will assess Transpower's proposed base year opex assumption to ensure that an appropriate level of base opex has been used in Transpower's base-step-trend modelling. Transpower's proposal opex base year of 2022/23 is different to the opex base year (2021/22) reviewed by the Verifier.

X41 We will test how Transpower's proposed increase in staff resourcing affects both opex need and capex programme delivery using scenario information sought from Transpower, including how Transpower plans to monitor staffing levels. We will focus this analysis on the ICT opex, Asset Management and Operations (**AM&O**) and business support portfolios as these are directly concerned with RCP4 programme delivery.

X42 We will also be exploring the link between Transpower's insurance expenditure, and both its resilience expenditure and potential use of our reopener provisions, to determine whether expenditure in these areas is likely to translate to reductions in insurance premiums over time.

Deliverability

X43 A key issue identified by the Verifier is whether Transpower and its service providers can deliver the proposed programme of work over RCP4. The Verifier considered this will be a significant challenge for Transpower, particularly the necessary increase in skilled staff to plan, design, coordinate and install the proposed programme of work.

X44 Transpower plans to mitigate this risk with its workforce planning framework and has implemented several recruitment and training initiatives to meet its resource requirements. It has also revised its service provider contracting arrangements to enable more consistent delivery from its service providers, and to incentivise them to develop staff.

X45 While global demand for transmission assets and equipment has resulted in supply chain issues, the Verifier was less concerned about Transpower's ability to procure assets in a timely manner and warehouse these assets well ahead of need.

X46 Despite the steps Transpower has taken to mitigate delivery risk, we are still concerned that it may not be able to deliver the proposed work programme, in addition to the major projects it has signalled it needs over RCP4. The increased investment programme predicted by electricity distribution businesses (**EDBs**) might also be a factor in Transpower's ability to deliver its work programme.

X47 Deliverability represents a risk that projects are planned but are not delivered, resulting in elevated profits for Transpower, not through improved efficiency but through non-delivery.

X48 Under-delivery may also result in elevated levels of asset and network risk. Assets that are not refurbished or renewed in a timely manner can result in a defect backlog, which over time will increase asset outage risk.

X49 We will focus on Transpower's deliverability risk in our review of the proposal and set out some preliminary ideas about how this risk may be mitigated in Chapter 8 of this paper.

Revenue path

X50 Transpower has proposed a smoothed price path for RCP4 which is consistent with the requirements of the Transpower IMs and is similar to the approach we used to set the price path for RCP3. Transpower's proposal shows smoothing that would result in a 39.5% step change in the allowable revenue between the last year of RCP3 and the first year of RCP4, and includes a 5.0% annual growth rate which accounts for increasing forecasted inflation and higher weighted average cost of capital (**WACC**).[26]

X51 We have calculated that this step change will be 24.9% once we apply our 2023 IM Review decision to index Transpower's RAB to inflation under amended IMs which are set to come into effect for RCP4.[27]

X52 We consider that the benefits of smoothing of the RCP4 price path could be similar to those set out in RCP3. In particular, price path smoothing provides increased pricing transparency and predictability within the RCP.[28]

X53 We asked Transpower to model a range of alternative price path scenarios, which it has provided to us with its proposal. In Attachment A of this paper we set out our preliminary analysis of these scenarios and we identify the scenarios that we consider merit further consideration in order to promote the long-term benefit of consumers.

X54 We note that our work in considering the impact of the price path revenue profile on the pricing of the ultimate services to consumers is still a work in progress in conjunction with our setting of the electricity distribution default price-quality path 4 (**DPP4**).

X55 We invite your view on which Transpower price path scenario, and which price path revenue profile you consider, at a high level, is more likely to be to the long-term benefit of consumers.

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[26] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), page 210.

[27] Commerce Commission, "*Financing and incentivising efficient expenditure during the energy transition topic paper – Part 4 Input Methodologies Review 2023 – Final decision*", (13 December 2023), Chapter 3.

[28] Commerce Commission, "*Transpower's individual price-quality path from 1 April 2020 – Decisions and reasons paper*", (29 August 2019), paragraph J23.

General

X56 Transpower's RCP4 proposal was due prior to us publishing our final decisions in the input methodology review 2023 (**IM Review**). This means the calculation of the RCP4 allowable revenues in Transpower's proposal is based on the input methodologies effective at the time of the proposal and not the amended input methodologies. We asked Transpower to model revenue scenarios that incorporated our draft input methodologies decisions, and these scenarios were provided to us with the RCP4 proposal. Where relevant, we have presented the information consistent with the IMs finalised in December 2023.

X57 We discuss the effects of the IM Review 2023 including the effect of indexation of Transpower's RAB on the IPP in more detail in Chapter 2. Further detail on the revenue scenarios can be found in Chapter 10.

X58 Since verification was completed in September 2023, Transpower has modified its proposal in a number of areas. Where we identify these changes, we will test those we consider to be the most material. We will ascertain if the reasons for the changes are justified and consistent with the Capex IM evaluation criteria.[29]

[29] For example, in the power transformers asset class the Verifier reviewed $154.1 million ($2021/2022) of proposed capex and verified $144.1 million ($2021/2022) of that capex. In its proposal Transpower has modified its programme in this asset class and is now seeking $196.2 million ($2022/2023).

Chapter 1 Introduction

Purpose of this paper

1.1 We are in the process of setting Transpower's expenditure allowances and quality standards, as part of determining Transpower's IPP for the RCP, to apply from 1 April 2025 (RCP4).[30]

1.2 We have undertaken an initial review of Transpower's RCP4 proposal and the associated independent verification report, and we have identified a number of issues on which we would like to hear your views.[31,32]

1.3 Your views will assist us in identifying where to undertake more detailed reviews of Transpower's proposal before we consult with you on our draft decision due to be released in May 2024. We will publish our final IPP determination in November 2024.

Structure of this paper

1.4 This paper outlines our initial observations on the key issues for the IPP reset and sets out some questions to help you in drafting your responses to the issues.

1.5 A description of each chapter is set out in Table 1.1 below.

Table 1.1 Structure of this paper

Section	Title	Description
Chapter 1	Introduction	Sets out the purpose of this paper, what it covers, how it is structured, how you can provide your feedback, and the next steps.
Chapter 2	Context	Summarises the context of RCP4, including the major drivers for revenue uplift and comparison with RCP3.
Chapter 3	Overview of Transpower's proposal and the Verifier's findings	Provides an overview of Transpower's RCP4 proposal and the Verifier's findings as well as our areas of focus, including those proposed by the Verifier.

[30] Information about RCP4 can be found on our website here.
[31] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023).
[32] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*" (12 September 2023).

Section	Title	Description
Chapter 4	Asset management	Discusses specific areas that we are likely to explore further with Transpower in preparation for the RCP5 and RCP6 periods, and seeks your views on Transpower's current asset management practices, and how these will affect the RCP4 period.
Chapter 5	Base capital expenditure forecast	Discusses specific areas that we are likely to explore further with Transpower in setting the RCP4 base capex allowance, and other RCP4 expenditure in preparation for RCP5 and RCP6, and seeks your views on potential issues with Transpower's RCP4 base capex forecast.
Chapter 6	Operating expenditure forecast	Discusses Transpower's proposed opex expenditure, and specific areas we are likely to explore further in setting the RCP4 opex allowance, and seeks your views on these areas.
Chapter 7	Grid output measures	Seeks your views to help inform our assessment of Transpower's RCP4 proposal material, to assist us in setting effective grid output measures, and quality standards for RCP4 and beyond.
Chapter 8	Deliverability	Describes concerns raised by the Verifier and seeks your views on how Transpower has addressed deliverability risks for RCP4 expenditure and outputs.
Chapter 9	Possible new information disclosure requirements	Describes Transpower's progress after the RCP3 section 53ZD notices (Consumer consultation, asset management, cost estimation), and discusses possible initiatives for improvement we may set over RCP4. We seek your views on initiatives for improvement that could justify the collection and publication of information from Transpower in RCP4.
Chapter 10	Revenue path	Describes Transpower's proposed revenue path and smoothing variations, RAB indexation implementation issues, and seek your views on an appropriate revenue path smoothing profile.
Attachment D	Preliminary assessment of Transpower's revenue path smoothing	Our preliminary assessment and illustration of Transpower's proposed revenue path smoothing.

How you can provide your feedback on the matters discussed in this paper

1.6 This issues paper highlights a number of key focus areas and specific issues relating to Transpower's RCP4 proposal[33] and sets out some targeted questions on those issues. However, you may submit to us on any matter relevant to Transpower's RCP4 proposal. You are invited to provide your written views within the timeframes set out below:

1.6.1 Submissions are due by 5pm, Wednesday 21 February 2024; and

1.6.2 Cross-submissions on matters raised in submissions by other parties are due by 5pm, Wednesday 13 March 2024.

1.7 Please address your email submissions to:

Project Manager, Transpower and Gas c/o

infrastructure.regulation@comcom.govt.nz

1.8 Please include "Transpower IPP 2025 – Issues Paper" in the subject line of your email. We prefer responses to be provided in a file format suitable for word processing, in addition to PDF file format.

1.9 Submitters to our process, framework and approach paper encouraged us to run workshops and to allow extra time for consultation due to the large volume of parallel consultations in the electricity sector at this time.[34,35] Where you identify issues in Transpower's proposal that you think could benefit from a workshop, please raise these with us in your submission.

Requests for confidentiality

1.10 We intend to publish all submissions on our website. This is an important step, as it allows us to test all information received from you in a fully transparent way, including through cross-submissions.

1.11 The protection of confidential information is something the Commission takes seriously. The process requires you to provide (if necessary) both a confidential and non-confidential/public version of your submission, and to clearly identify the confidential and non-confidential/public versions.

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[33] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023).

[34] Major Electricity Users' Group, "*Submission on process and approach paper*", (November 2023).

[35] Vector Limited "*Submission on process and approach paper*", (November 2023).

1.12 When including commercially sensitive or confidential information in your submission, we offer the following guidance:

1.12.1 Please provide a clearly labelled confidential version and a separate public version. We intend to publish all public versions on our website.

1.12.2 The responsibility for ensuring confidential information is not included in a public version of a submission or cross-submission, rests entirely with the party making it. Please note that all submissions we receive, including any parts that we do not publish, can be requested from us under the Official Information Act 1982. This means we would be required to release material that we do not publish unless good reason exists under the Official Information Act 1982 to withhold it. We would normally consult with the party that provided the information before we disclose it to a requester.

Parallel consultations

1.13 We are conscious that our RCP4 consultation process will be running alongside a number of other important electricity sector consultations, including the 2025 DPP4, that we will set in December 2024, and potential processes run by other agencies such as Ministry for Business, Innovation and Employment (**MBIE**) and the Electricity Authority (**EA**).

1.14 We will work to build consistencies into our own processes, including incorporating changes stemming from the Transpower input methodologies and Capex IM review decisions into the IPP process, and aligning aspects of the IPP and DPP4 approaches where relevant.

Next steps

1.15 Following our consideration of submissions and cross-submissions on this paper, we expect to publish our draft RCP4 IPP decisions in May 2024. These draft decisions will include:

1.15.1 Transpower's expenditure allowances, quality standards, incentive measures and compliance obligations;

1.15.2 the design of the revenue path, including potential smoothing of the revenue path; and

1.15.3 a draft IPP determination published for technical submissions.

1.16 Indicative dates for our IPP reset process are provided in Table 1.2 below.[36]

Table 1.2 Indicative dates for our IPP reset process

Indicative date	Process step
25 January 2024	Issues paper on Transpower's RCP4 proposal published
21 February 2024	Submissions due on our issues paper
13 March 2024	Cross-submissions due on our issues paper
May 2024	Draft decisions on RCP4 IPP, including expenditure allowances, quality standards, compliance obligations and revenue path design published for submissions Draft IPP determination published for submissions
June 2024	Submissions due on our draft decisions Technical submissions due on our draft IPP determination
July 2024	Cross-submissions due on our draft decisions and our draft IPP determination
August 2024	Final decisions on expenditure allowances, quality standards, incentive measures, compliance obligations and the revenue path design published Revised draft IPP determination published for information only, subject only to revenue path updates for the Transpower WACC in October
12 September 2024	Draft information request provided to Transpower to calculate the forecast smoothed maximum allowable revenue (**SMAR**) for RCP4
3 October 2024	Information request issued to Transpower to calculate the forecast SMAR for RCP4
10 October 2024	Transpower WACC published
31 October 2024	Transpower's forecast SMAR for RCP4 to be provided by Transpower to the Commission
November 2024	Final IPP determination and companion paper published
28 November 2024	Last statutory date to publish IPP determination

[36] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023).

Chapter 2 Context

Purpose of this chapter

2.1 This chapter discusses the wider context for our decisions for RCP4, and how this context has changed since RCP2 and RCP3, including:

2.1.1 an increasing focus on climate change effects and resilience planning;

2.1.2 New Zealand's commitment to net zero carbon goals, development of a net zero carbon plan, and electrification of fossil fuel-based loads; and

2.1.3 inflation and interest rates which are having a strong impact on infrastructure investment.

Our role

2.2 Transpower is regulated under Part 4 of the Act as it has a natural monopoly in the market for electricity transmission services. The Part 4 regime seeks to promote the long-term benefit of consumers of regulated services such as electricity line services.

2.3 Under Part 4, Transpower is subject to Individual price-quality path regulation. The IPP we set under this regulation determines, among other things, the maximum revenue that Transpower can recover from its customers for each regulatory period, and the minimum quality standards it must meet, for each year within the regulatory period.[37] The price-quality path may also include incentives for Transpower to maintain or improve its quality of supply, and this may include revenue-linked measures.[38]

2.4 Transpower is required to provide a base capex proposal for us to consider ahead of setting the IPP.[39] Base capex includes asset replacement and refurbishment, business support, and ICT assets. It excludes major capex projects (**MCPs**). The process for grid investment through MCPs is set out in the Capex IM and sits outside the IPP price-setting process we are undertaking here.[40]

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[37] Commerce Act 1986, sections 53ZC and 53M(1).

[38] Commerce Act 1986, section 53M(2).

[39] *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination* 2023 [2023] NZCC 39, (13 December 2023), clause 2.2.1 and 2.2.2.

[40] *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023[2023] NZCC 39*, (13 December 2023), clause 3.3.3.

2.5 Our role in setting this IPP is to ensure that Transpower's base investment is prudent and efficient, using the regulatory tools available to us.

2.6 Timing is important to ensure the right investment is made at the right time so that consumers do not bear unnecessary costs. We must also consider the impact that investment decisions now will have on future generations of consumers. Where uncertainties around investment decisions remain, there are opportunities for Transpower to seek our approval for additional revenue within the regulatory period, using price-quality path reopener processes, once there is more certainty about the benefit of an investment.[41]

2.7 RCP4 will be the first full regulatory period for which Transpower's regulated revenues will flow through to customer prices using the new Transmission Pricing Methodology (**TPM**).[42] While we do not regulate the customer allocation of Transpower's revenues, we will consider the impacts of Transpower's proposal on its customers (and ultimately on consumers).

Transpower's progress on RCP3 improvement initiatives

2.8 Transpower's responsiveness to the key features of our RCP3 information disclosure requirements has been positive. Transpower has also been progressing its asset health modelling and risk understanding since the RCP3 Verifier identified this as a key area of development.

2.9 Improved asset health models help analytically to underpin expenditure forecasts, and a risk understanding allows asset replacement, versus renewal decisions, to be made on a risk/cost basis.

2.10 Similarly, Transpower has been developing its customer engagement, which was externally reviewed and found to be effective and improving. Transpower is proposing to add new measures for customer engagement in RCP4 which has come as a result of consultation with its customers.

2.11 Finally, Transpower has been evolving its project and programme cost estimation processes over RCP3. More accurate cost estimation processes mean we can be more confident that the revenue limits we set are at the right level, encouraging neither over- nor under-estimating of costs.

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[41] The Transpower price-quality path reopener processes have recently been updated in the IM Review 2023.

[42] Description of the changes can be found at https://www.transpower.co.nz/our-work/industry/grid-pricing/transmission-pricing-methodology/about-tpm.

2.12 In this paper, we consider further enhancements that may be made to Transpower's RCP4 IPP, including updated quality standards and grid output measures (Chapter 7) and further improvements to asset health and risk models (Chapter 9).

The context for RCP4 and contrast to the previous reset

Inflationary pressures

2.13 For businesses, high interest rates are increasing asset and labour costs. For Transpower this translates into revenue and pricing increases. For example, Transpower is forecasting a higher interest rate and thus a higher regulated cost of capital of 7.17% in this price-quality path reset, versus the cost of capital of 4.57% which applied over RCP3.[43] In its proposal, Transpower notes that inflationary pressures are reflected in labour costs, technology, and asset availability across all parts of the supply chain. [44]

Decarbonisation and electrification

2.14 RCP4 will arrive at a time of significant challenges in the power sector, driven by decarbonisation and the anticipated electrification of fossil fuel use. Uncertainty surrounds the scale, location, and timing of increased electricity demand, and generation developments to meet that demand. Transpower has reported it is experiencing a significant uplift in new renewables generation grid connection enquiries.

2.15 Transpower must maintain grid reliability whilst allowing the increased electrification load to connect.

Resourcing and deliverability

2.16 Decarbonisation of energy systems is a global pursuit and demand for a skilled workforce is increasing, putting upward pressure on resourcing costs and availability, and impacting deliverability of planned projects.

Climate impacts and resilience

2.17 Climate change effects are also focussing electricity suppliers and Transpower to address network resilience issues, as weather patterns and risk exposures change. This will affect existing network assets and future plans.

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[43] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 2.7, page 18.

[44] We will determine Transpower's WACC for RCP4 in October 2024.

2.18 After Cyclone Gabrielle and the Auckland floods in early 2023, consumers are increasingly concerned about the electricity sector's resilience to extreme weather events. The Consumer Advocacy Council's consumer sentiment survey reported an 8% increase in households, and 9% increase in businesses from 2022 to 2023, concerned about the resilience of the electricity sector.[45]

2.19 In our setting of Transpower's price-quality path, we will consider the inclusion of prudent and efficient costs for resilience initiatives. This includes considering if expenditure levels need to change due to any increased costs of resilience to climate change, where these are based on robust forecasts.

Revenue increases

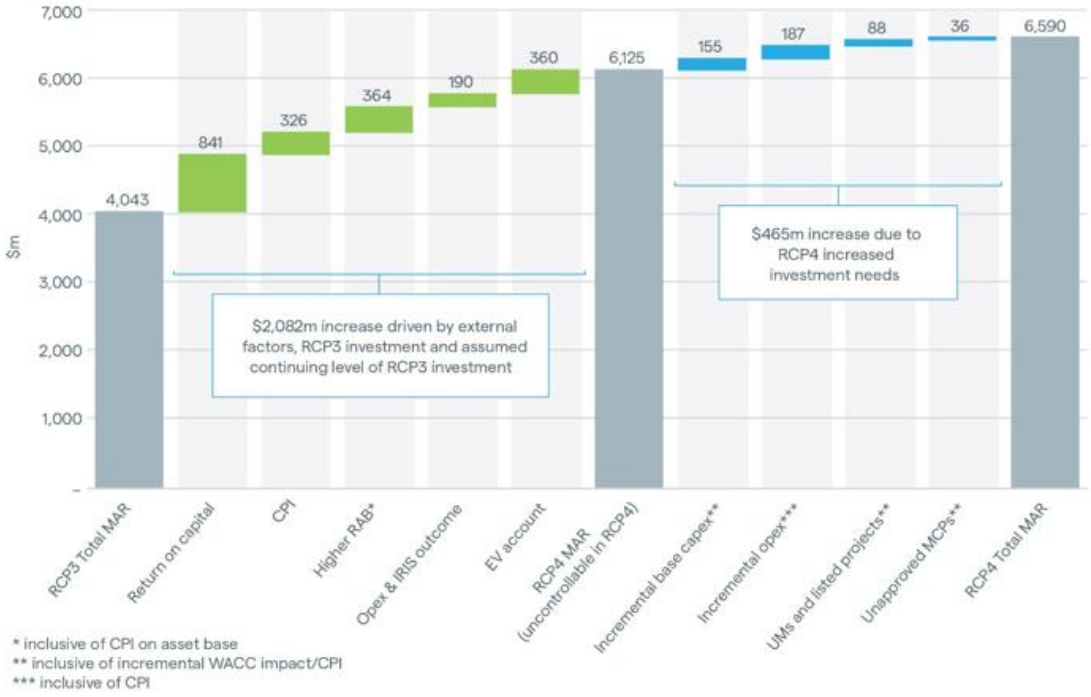
2.20 RCP3 was set at a time of relative price stability with stable inflation rates and comparatively low interest rates (near 2%).[46] In comparison, at this reset Transpower is proposing significant increases in revenue requirements due to the current investment environment and inflation.

2.21 In Figure 2.1 below, taken from Transpower's RCP4 proposal, the drivers of the revenue increase from RCP3 to RCP4 are illustrated. According to Transpower, the increases in green show the revenue for RCP4 if the RCP4 expenditure was to stay the same as RCP3 i.e., the changes that are outside Transpower's control and are increasing due to the current investment environment and inflation. In contrast, the changes in blue reflect increases within Transpower's control, including incremental investments, recovery of the costs of MCPs, and opex in RCP4.

[45] Kantar Public for Consumer Advocacy Council "*Electricity consumer sentiment survey – residential consumers and small businesses*", (March 2023), page 5.

[46] For historical interest rates and inflation, please see the Reserve Bank of New Zealand website.

Figure 2.1 Forecast total MAR movement from RCP3 to RCP4, nominal $m (2022/23) [47]



2.22 In its RCP4 proposal, Transpower signalled there may be a material step change in revenues between the RCP3 and RCP4 smoothed price paths.[48] We are mindful of consumer price shock effects, and we will consider ways to manage the potential revenue step change into RCP4, in conjunction with the revenue impacts of the DPP4 price path.

[47] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 12.4, page 211.

[48] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 8.5, page 148.

2.23 In its response to our process, framework, and approach paper, Transpower warned against delaying expenditure to avoid price shocks, as this would go against the Part 4 purpose, placing a greater revenue recovery burden on future customers and their consumers.[49,50]

2.24 MEUG noted in their response the impact of revenue increases and supported smoothing of revenue:[51]

> Given the likely uplift in allowable revenue and prices, we support the smoothing of revenue within a regulatory control period, as well as smoothing across regulatory periods. Any considerable price shocks should be avoided where possible.

Effects of IM Review 2023 on the IPP

2.25 Transpower's RCP4 proposal was due ahead of us publishing our final decisions in the 2023 IM Review, on 13 December 2023. This means the calculation of the RCP4 allowable revenues in Transpower's proposal is based on the current input methodologies effective at the time of the proposal and not the amended input methodologies.

2.26 The IPP we set for RCP4 will implement the amended input methodologies. To take this into account, we asked Transpower to model revenue scenarios that incorporated our draft input methodologies decisions, and these scenarios were provided to us with the RCP4 proposal. The scenarios are described in Chapter 10 of this paper.

2.27 The relevant changes arising from the IM Review we will need to implement, as they relate to the IPP for RCP4 are:

2.27.1 the decision to index Transpower's regulatory asset base (**RAB**) to inflation;

2.27.2 the 65th percentile of our estimated WACC will apply for price-quality path regulation;

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[49] The Part 4 purpose as set out in section 52A of the Commerce Act 1986 is to promote the long-term benefit of consumers by promoting outcomes that are consistent with outcomes produced in competitive markets such that suppliers of regulated goods or services—
(a) have incentives to innovate and to invest, including in replacement, upgraded, and new assets; and
(b) have incentives to improve efficiency and provide services at a quality that reflects consumer demands; and
(c) share with consumers the benefits of efficiency gains in the supply of the regulated goods or services, including through lower prices; and
(d) are limited in their ability to extract excessive profits.

[50] Transpower New Zealand Limited, "*Submission on process and approach paper*", (November 2023).

[51] Major Electricity Users' Group, "*Submission on process and approach paper*", (November 2023).

2.27.3 the change in the base capex threshold from $20 million to $30 million;[52]

2.27.4 the ability for the anticipatory capacity portion of an anticipatory connection asset (**ACA**) to be included in the base capex; and

2.27.5 extension of the Listed Project mechanism to allow Transpower to include transmission line reconductoring and cable replacement projects, primarily driven by the deteriorating condition of the conductor or cable, as listed projects.

2.28 There are also changes arising from the IM Review that may later have an impact on the price path and consumer prices (e.g. mid-period reopeners). These relevant changes are:

2.28.1 the ability for ACA anticipatory capacity investments to be recovered through an ACA anticipatory capacity reopener for anticipatory capacity investments greater than $10 million but less than $30 million at any time in RCP4;

2.28.2 the ability for ACA anticipatory capacity investments to be recovered through the MCP process for ACA anticipatory capacity investments greater than $30 million;

2.28.3 the inclusion of a specific driver for resilience projects in the mid-period Enhancement and Development base capex reopener;

2.28.4 for the change event and catastrophic event reopeners, the lowering of the nominal threshold to $5 million and changing the calculation method for the thresholds to an 'incurred cost' basis;

2.28.5 the lowering of the error event reopener threshold to $100,000;

2.28.6 the lowering of the EV build-up threshold to 5% of SMAR for the final pricing year;

2.28.7 the requirement for Transpower to adjust its recoverable costs to take account of those costs which are common to regulated and unregulated services, if the common costs exceed 2% of its operating costs or asset values associated with regulated services over a disclosure year; and

[52] Transpower appears not to have included any expenditure that may be affected by a change in the base capex threshold in its proposal.

2.28.8 the provision for Transpower of a 'reopener event allowance' recoverable cost.

2.29 We are aware that there may be practical input methodologies implementation matters for us and Transpower to consider, due to the timing of our final IM Review decisions, relative to timing of Transpower's RCP4 proposal submission. The following practical steps have been undertaken to aid in the transition to the amended input methodologies:

2.29.1 to take into account any possible IM changes, we requested Transpower to model different forecast revenues including scenarios applying the (at the time) draft IM Review decisions. To this effect, Transpower provided modelling which has been calculated using an indexed RAB and 65th percentile estimate of WACC; and

2.29.2 with respect to indexation of Transpower's RAB, Vector's submission to our process, framework and approach paper included suggestions relating to RAB indexation of Transpower and EBDs. However, as indexation was covered through a separate IM process, we do not address the specific comments in this issues paper.

Chapter 3 Overview of Transpower's proposal and the Verifier's findings

Purpose of this chapter

3.1 This chapter provides an overview of key aspects of Transpower's RCP4 proposal and the Verifier's findings. Transpower's proposal covers the five-year period from 1 April 2025 to 31 March 2030. This overview provides a starting point for you to understand Transpower's proposal, and a guide to where you can find more in-depth information.

3.2 We summarise Transpower's revenue proposal, its proposed opex and capex, proposed quality standards and performance measures, and the Verifier's findings and recommendations on each of these.

3.3 Some of the matters outlined in this chapter are covered in more depth in particular chapters in this paper, where we highlight our thinking to date on these matters and seek your input. Transpower's RCP4 proposal and the Verifier's full report can be found on Transpower's website.[53,54]

3.4 Transpower has proposed a different base year (2022/23) to the base year as assessed by the Verifier (2021/22). As such, all dollar figures taken from Transpower's proposal are in constant $2022/2023 whereas the Verifier's figures are in constant $2021/2022. Where appropriate for a direct comparison, we have converted the $2021/2022 figures to $2022/2023 using actual Consumer Price Index (**CPI**). This is reflected in some of the tables and figures throughout this paper.

Transpower's RCP4 proposal

Transpower's expenditure proposal

3.5 Transpower has proposed:[55]

3.5.1 a 32% increase in capex, from $1,698.9 million over RCP3 to $2,250.2 million over RCP4 (constant $2022/2023); and

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[53] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030",* (21 November 2023).

[54] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023).

[55] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), p. 208-209.

3.5.2 a 20% increase in opex, from $1,632.6 million over RCP3 to $1,957.6 million over RCP4 (constant $2022/23).

3.6 Transpower is proposing an increase in expenditure across most asset/expenditure categories in RCP4 compared to RCP3. The 32% base capex increase does not include Transpower's proposed $488.2 million in uncertainty mechanism expenditure.[56]

3.7 Transpower has identified the key drivers of the increase in *expenditure* over RCP4 as:[57]

3.7.1 ageing assets;

3.7.2 increased workforce to deliver the proposed work programme;

3.7.3 resilience; and

3.7.4 input cost pressures and electrification.

Transpower's revenue proposal

3.8 In its proposal Transpower states that RCP4 revenue is forecast to be $6,474 million, compared with $4,065 million over RCP3, an increase of 59%. Transpower notes that this excludes "unapproved major and listed capex projects, as well as our proposed uncertainty mechanisms" which would add a further $118m of revenue over RCP4.[58]

3.9 This forecast revenue figure of $6,474 million has not included the effect of RAB indexation. When the RAB indexation effect is incorporated, the RCP4 forecast revenue requirement reduces to $5,896 million; and the proposed RCP4 revenue increase is reduced to 45%.[59]

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[56] This value includes proposed listed projects, resilience uncertainty mechanism and electrification uncertainty mechanism capex.

[57] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 4.2, page 32.

[58] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030",* (21 November 2023), section 12.4, page 210.

[59] Total SMAR taken from Transpower's RCP4 Indicative Transmission Charges – Indexed RAB available at https://www.transpower.co.nz/our-work/industry/regulation/rcp4/our-proposed-five-year-workplan.

3.10 Following our recent IM Review decisions, Transpower's RAB will be indexed to inflation from the beginning of the RCP4 period on 1 April 2025. [60] This will have the effect of delaying recovery of asset investment out further over the lifetime of the assets and limiting the increase in revenue for this period.

3.11 Transpower notes that its RCP4 revenue requirement is significantly higher due to higher interest rates and the rise in inflation. It forecasts the RCP4 revenue in real terms to be similar to the revenue requirement over RCP2, when interest rates were at a similar level to those forecast for the RCP4 period.

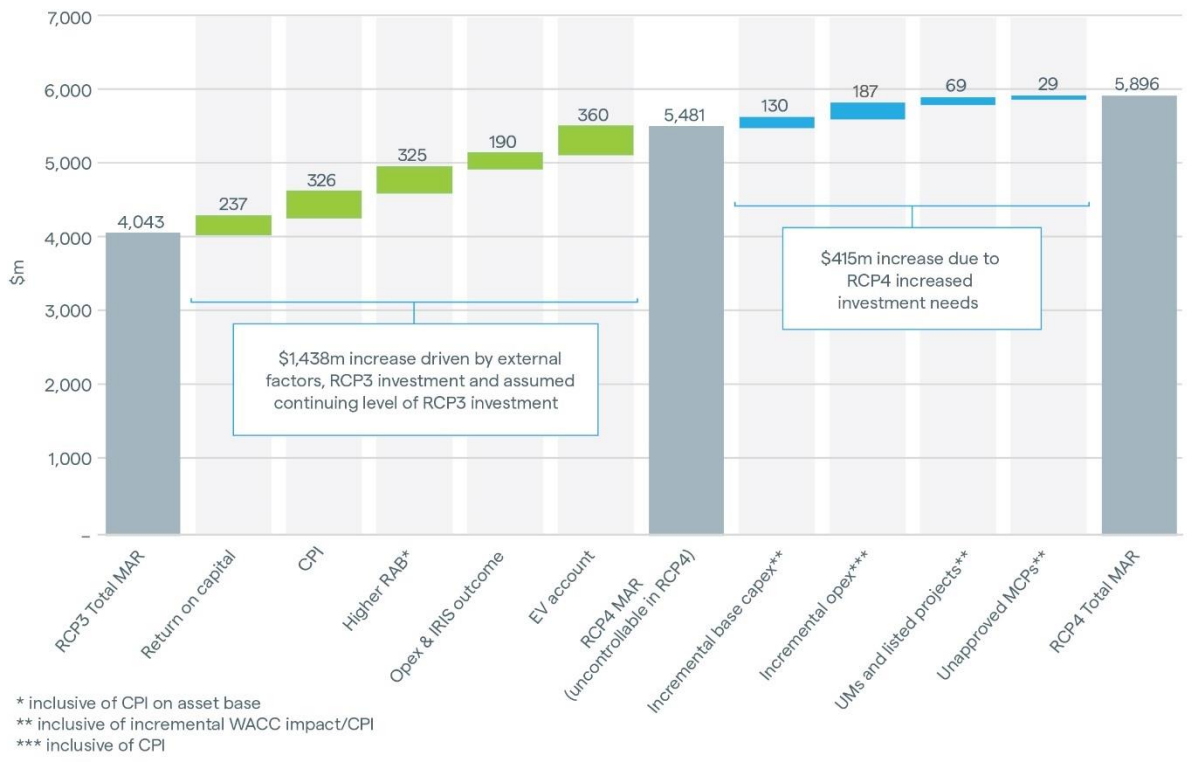
3.12 Figure 3.1 below is reproduced from Transpower's proposal and illustrates that approximately 22% of the forecast RCP4 revenue increase is due to increased capex and opex over RCP4.

3.13 The remaining 78% of the forecast RCP4 revenue increase is due to RCP3 investment increasing the RAB, under-recovery of revenue over RCP3, and external factors such as forecast increases in the return on capital, and the CPI.[61]

[60] Commerce Commission, "*Financing and incentivising efficient expenditure during the energy transition topic paper – Part 4 Input Methodologies Review 2023 – Final decision*", (13 December 2023), paragraph 3.4.3.

[61] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), page 211.

Figure 3.1 Forecast total MAR for RCP4, indexed RAB



Transpower's proposed changes to grid output targets and incentives

3.14 For RCP4, Transpower is proposing ten service measures. It also proposes we discontinue two measures i.e., AP5 (N-security reporting), and GP-M (momentary interruptions' reporting).

3.15 Transpower's proposal includes:

3.15.1 four revenue-linked measures;

3.15.2 six non-revenue-linked measures;

3.15.3 a change to point-of-service subcategories;

3.15.4 additional asset categories for asset health;

3.15.5 some changes to existing measures, which we detail in Chapter 7; and

3.15.6 three new measures: GP3 (energy not served), CS1 (customer experience), and CS2 (reporting on new grid connections).

3.16 For revenue-linked measures, Transpower has proposed that targets be linked to an economic incentive/penalty of up to 1.4% of forecast revenue ($90 million nominal, plus or minus, across RCP4). The revenue at risk for RCP3 was also 1.4% although total revenue was lower, translating to approximately $57 million at risk.

The Verifier considered Transpower's proposal

3.17 While it is not a requirement of the Capex IM, Transpower engaged an independent verifier (IV) to review, in advance of us receiving the proposal, the policies, planning standards and assumptions that underpin Transpower's forecast information on proposed capex, opex, quality measures and demand.[62]

3.18 The IV review should assist us to better focus our review of Transpower's proposal on:

3.18.1 areas where forecast expenditures and/or associated grid output measures may not meet the expenditure outcome;[63] and

3.18.2 how Transpower's RCP3 performance initiatives have improved its proposal.

The Verifier considered Transpower's proposed expenditure

3.19 The Verifier reviewed the majority of Transpower's proposed opex and base capex. Overall, the Verifier found that:[64]

> the proposed expenditure amounts that we reviewed and accepted are consistent with an expenditure outcome which represents the efficient costs of a prudent electricity transmission services supplier having regard to GEIP and the evaluation criteria

3.20 The Verifier reviewed all $1,797.3 million of Transpower's proposed RCP4 opex and verified 100% of the total that was proposed.

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[62] We have since amended the Capex IM as part of the 2023 IM Review to include a requirement for Transpower to engage an independent verifier and to in future submit an independent verification report alongside each IPP proposal. See Commerce Commission, *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023* [2023] NZCC 39, at clause 7.6.1.

[63] We consider that the expenditure outcome reflects the efficient cost of a prudent supplier having regard to Good Electricity Industry Practice (GEIP). We set out our proposed approach to assessing expenditure against the expenditure outcome in Attachment A of our Process, framework and approach paper - 9 October 2023.

[64] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page i.

3.21 The Verifier reviewed $1,933.2 million (96.6%) of Transpower's proposed $2,001.4 million in RCP4 base capex. It verified 93.6% of the expenditure, proposed 0.9% be re-categorised and did not verify 2.1%. The expenditure not verified relates to alternating current (**AC**) substation replacement and refurbishment, and business support opex.

3.22 The Verifier also reviewed $526.3 million[65] of proposed uncertainty mechanism capex proposed by Transpower, and verified 100% of that expenditure. The Verifier noted that its role was not to provide an opinion on the suitability of uncertainty mechanisms.

3.23 In the recently completed 2023 IM Review, we considered Transpower's suggestion that uncertainty mechanisms such as Use-It-Or-Lose-It (UIOLI) funding, be included in the Capex IM to address resilience, anticipatory connection asset capacity and connection asset replacement timing.[66]

3.24 However, we decided that, while a UIOLI funding mechanism was not supported in the Capex IM or Transpower IM, we made other IM changes to address resilience and connection asset capacity uncertainty issues, which Transpower can utilise over RCP4.

3.25 Table 3.1 and Table 3.2 below compare the capex and opex RCP3 spend with the proposed RCP4 spend. They also show where we will carry out further work on Transpower's proposal, and where we may issue requests for information (RFIs) to Transpower to enable us to do that work.

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[65] Note that Transpower updated this value in its final proposal to $488.2 in real terms.

[66] *Transpower investment topic paper – Part 4 Input Methodology Review 2023 – Final decision*, (13 December 2023).

Table 3.1 Summary of RCP4 proposed capital expenditure and likely further work[67]

Expenditure programme	RCP3 expenditure ($m 22/23)	RCP4 proposal ($m 22/23)	Variance (%)	RCP4 verified ($m 22/23)	Our further capex reviews
Substations	$384.2	$509.1	33%	$444.3	• assess how asset failure rate data, asset replacement condition assessments, and international failure rate datasets are used to refine asset health model confidence limits and model outputs in selected asset classes. • assess the $15.4 million for other AC substation equipment that was rejected by the Verifier as lacking supporting information but is now included in the proposal.
Buildings and grounds	$90.6	$89.3	-1%	$115.3[68]	• assess the $13 million for compliance with drinking water requirements that was rejected by the Verifier but is still included in the proposal.
Transmission lines	$515.0	$724.3	41%	$691.2	• investigate how asset failure rate data, asset replacement condition assessments, and international failure rate datasets are used to refine asset health model confidence limits, and model outputs in selected asset classes. • Transpower's tower painting and structure interventions and how expert advice has informed its corrosion management strategy. • assess whether proposed replacement capex for BHL-PAK cable joints should be approved in full or net of warranty recovery. If these cable joints are under warranty, then the replacement cost (partly or fully) should be recovered from the manufacturer.
HVDC and reactive assets	$109.4	$161.3	47%	$160.8	• assess the impact of this spend against the capex expenditure for redundant STATCOM.

[67] The RCP3 and RCP4 expenditure figures are reproduced from the Transpower RCP4 proposal expenditure forecast model. The RCP4 verified figures are from the RCP4 Verifier report, inflated to 2022/2023 $'s using Transpower inflation data from its RCP4 proposal expenditure forecast model available at https://www.transpower.co.nz/our-work/industry/regulation/rcp4/our-proposed-five-year-workplan.

[68] Note that Transpower modified its proposed expenditure for Buildings and Grounds following verification. During verification Transpower had proposed $121 million ($2021/2022) and the Verifier verified $108 million ($2021/2022) of that proposed expenditure.

Expenditure programme	RCP3 expenditure ($m 22/23)	RCP4 proposal ($m 22/23)	Variance (%)	RCP4 verified ($m 22/23)	Our further capex reviews
Secondary assets	$233.8	$282.3	21%	$268.4	• investigate how asset failure rate data, asset replacement condition assessments, and international failure rate datasets are used to refine asset health model confidence limits, and model outputs in selected asset classes.
E&D	$124.4	$111.7	-10%	$99.9	• investigate how Transpower has assessed project need, timing, and likelihood of the proposed E&D projects.
Resilience	$0.5	$75.0	-	$75.0	• assess whether resilience capex should be E&D capex. • assess Transpower's resilience analysis framework to test how risks are identified, prioritised, and risk consequences quantified, to ascertain if mitigations are cost-effective.
ICT capex	$160.9	$209.1[69]	30%	$192.7	• perform a top-down review of the unreviewed/unverified ICT capex to test whether this is consistent with the Capex IM evaluation criteria. • investigate whether the TransGo project capex should be subject to the base capex low incentive rate of 15%, or the standard base capex incentive rate. • investigate TransGo project capex cost estimation.
Business support capex	$23.9	$34.7	45%	$29.0	• review proposed capex above what was reviewed by the verifier to test whether this is consistent with the Capex IM evaluation criteria.
TOTAL	**$1,642.7**	**$2,196.7[70]**	**34%**	**$2,076.7**	

[69] We note that there is a small difference in ICT capex in Transpower's expenditure forecast model and the proposal document which we will discuss with Transpower in our review of the proposal.

[70] Transpower is also seeking $56.4 million for capitalised leases.

Table 3.2 Summary of RCP4 proposed opex likely further work

Expenditure programme	RCP3 expenditure ($m 22/23)	RCP4 proposal ($m 22/23)	Variance (%)	RCP4 verified ($m 22/23)	Our further opex reviews
Grid Maintenance	$630.3	$690.1	9.5%	$661.3	• investigate Transpower's asset age profile from Replacement and Refurbishment projects, and consider whether level of grid maintenance opex is correct, given the asset age profile.
Asset Management and Operations	$375.6	$428.2	22.9%	$436.7	• review level of opex is consistent with forecasted increase in capex. • deliverability of FTE recruitment and consider expenditure in light of this.
Business Support	$286.0	$320.1	11.9%	$331.5	• deliverability of FTE recruitment and consider expenditure in light of this. • further investigate FTEs associated with TPM.
ICT Opex (Including SaaS)	$207.5	$290.0	39.8%	$294.6	• how this opex portfolio will be affected by FTE deliverability.
Insurance	$132.7	$181.1	36.5%	$196.0	• whether prior resilience expenditure has had an impact on insurance premiums.
TOTAL	**$1,632.6**	**$1,957.7**	**19.9%**	**$1,920.1**	

The Verifier reviewed other non-expenditure elements of Transpower's proposal

3.26 In its expert opinion on Transpower's asset health and risk modelling, the Verifier noted that while Transpower's asset management was in a "mature state which is well developed" it identified five asset categories where asset health modelling improvement opportunities were available, and six asset categories where there were asset risk improvement opportunities available.

3.27 Transpower and its service providers will need to rapidly grow their specialised and field-based resources to be able to deliver the work programme under RCP4. The Verifier identified deliverability as a concern due to worldwide demand for such resources and considers that regular reporting will be required from Transpower on the status of additional workforce recruitment.

3.28 We summarise and discuss the Verifier's findings on these two topics in more detail in the Chapters on Asset Management (Chapter 4), and Deliverability (Chapter 8), of this paper.

Summary of areas the Verifier considers we should focus on

3.29 The Verifier recommended we focus our attention on the following areas:

3.29.1 Transpower's ability to secure the specialised workforce resources required to deliver the RCP4 work program in the face of strong international competition for skilled energy sector labour;

3.29.2 reviewing the appropriateness of the revenue-based materiality threshold test for the Resource Management Act (**RMA**) reopener noting that, at the time of verification, we were in the process of publishing the Transpower IM and Capex IM review draft decisions;

3.29.3 performing appropriate cross-checks on Transpower's productivity forecast figure suggested by the Verifier; and

3.29.4 design features relating to the implementation of Transpower's proposed UIOLI mechanism.

Our focus areas for the IPP reset

3.30 As we discussed in our Process, framework, and approach paper, one of our focus areas will be on how Transpower's asset health and risk-based asset management is informing expenditure forecasts.[71]

3.31 A risk-based asset management approach should result in more prudent spending on asset replacement and refurbishment over time, and this is discussed in more detail in Chapter 4.

3.32 In addition to Transpower's development of its asset health and risk-based asset management approach, we consider the remaining areas of focus for us in the next stage of the RCP4 reset should be:

3.32.1 assessing how Transpower is identifying resilience risk, accounting for climate change effects, and considering potential changing risk exposures;

3.32.2 Transpower's ability to deliver on the work programme, considering the level of additional resource requirements by Transpower and its service providers, and the procurement of material and specialised equipment.

3.32.3 applying proportionate scrutiny to set appropriate expenditure allowances;

3.32.4 Transpower's engagement with customers;

3.32.5 revenue-linked performance measures when we set quality standards, and what quality standards are reasonable;

3.32.6 how we set the AP2 quality standard, which we consider has not been fit for purpose over RCP3, particularly how it accounts for asset unavailability due to transmission network upgrades;

3.32.7 revenue and pricing impacts, particularly the RCP4 starting price adjustment, and the nature of the revenue smoothing we apply; and

3.32.8 making recommendations about how Transpower could progress further with improvement initiatives to inform its RCP5 proposal.

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[71] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), paragraph 4.12.

Chapter 4 Asset management

Purpose of this chapter

4.1 This chapter focusses on Transpower's asset management practices, and explains why we think these are important to ensure that Transpower's asset-related expenditure forecasts are prudent and efficient, in RCP4 and beyond. Our assessment of Transpower's asset management informs our decisions to set Transpower's expenditure allowances for RCP4.

4.2 In this chapter we discuss:

4.2.1 why we focus on asset health and criticality, and why we think continuous improvement in these areas will improve Transpower's asset management practices;

4.2.2 the RCP3 expert opinion on Transpower's asset health and risk modelling development over RCP3;

4.2.3 the Verifier's view of Transpower's current asset management practices;

4.2.4 our preliminary view of Transpower's asset health and risk modelling maturity, in general, and with respect to specific asset classes; and

4.2.5 Transpower's understanding of network risk and how and why taking particular steps to develop this understanding could benefit Transpower, its customers, and other external stakeholders.

4.3 Finally, we pose specific questions seeking your views to help inform our assessment of asset management practice in Transpower's RCP4 proposal material, and to assist us in our strategy during RCP4 and beyond.

Why asset health and criticality understanding is important for effective transmission asset management practice

4.4 In our Process, framework, and approach paper, published in October 2023, we stated that a key focus area in our review of Transpower's RCP4 IPP proposal was its asset health and criticality understanding because this understanding informs expenditure forecasts and ultimately consumer bills.[72]

[72] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), paragraph 4.12.

4.5 Asset health reflects the likelihood of an asset failing due to its assessed condition, while criticality reflects the consequence of the asset failing, i.e., how the asset outage affects network reliability and consumer supply.

4.6 Having mature asset health understanding is a cornerstone of effective asset management because:

4.6.1 it informs asset replacement or refurbishment expenditure decisions; and

4.6.2 asset expenditure forecasts can be made with more certainty, particularly within the context of the regulatory approvals process.

4.7 Asset health models assist in determining if it is economic to refurbish assets, how long refurbishment is likely to provide a benefit, and the likely timing of expenditure intervention. Mature asset health models lead to more confidence that Transpower's expenditure forecasts can be relied upon, and:

4.7.1 reduces the price risk to consumers that Transpower is over-forecasting asset replacement or refurbishment expenditure; and

4.7.2 increases the outage risk to consumers that Transpower is under-forecasting asset replacement or refurbishment expenditure.

4.8 Asset criticality modelling ensures that asset outage implications are understood within the context of the wider network. We consider combined asset health and criticality understandings are key inputs into effective asset management because:

4.8.1 they provide timely asset health, and risk-based signals for asset refurbishment, and replacement investment decisions;

4.8.2 asset refurbishment and replacement strategies can be compared across the asset fleet, and prioritisation decisions can be made if a common asset criticality measure is employed, such as the monetisation of risk;

4.8.3 connected parties may be better informed of the likely outage risk that they face, linked to the price they are required to pay; and

4.8.4 Transpower can use network risk estimates to set performance measures and targets, based on the forecast investment strategy, rather than using historical performance as a predictor of future performance.

4.9 Following its review of Transpower's RCP3 proposal material, the RCP3 Verifier (Synergies Economic Consulting and GHD Advisory) identified a range of asset management related issues (asset health modelling and risk understanding) where it considered Transpower could improve.[73]

4.10 We used these identified issues as the basis for the asset health modelling and network risk improvement initiatives in our RCP3 decision. We set these initiatives to help ensure that:

4.10.1 capital expenditure forecasts will be more reliable at each RCP reset; and

4.10.2 future asset performance and grid performance can be linked to asset health rather than using historical performance as a measure of future performance.

4.11 We also set regular information disclosure requirements in our RCP3 decision, including a mid-RCP3 period expert opinion on Transpower's asset health and risk modelling development and maturity in preparation for RCP4.[74]

Expert opinion and RCP4 Verifier view on Transpower's asset health and risk modelling development

RCP3 expert opinion review of Transpower's asset health and risk modelling

4.12 The RCP3 expert opinion, provided by GHD Advisory (**GHD**), concluded that Transpower's asset management was in a "mature state which is well developed" and that it was progressing well against the asset management goals set in the improvement initiative. GHD considered that Transpower had "progressed well" and "met most of the targeted maturity positions".[75]

4.13 GHD concluded that it did not "identify any gaps relating to Transpower's ability to use the developed asset health models, criticality framework, and network risk-based decision-making framework to inform and support its base capex need for RCP4 submission"[76]

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[73] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*" (12 September 2023), section 5.4, page 113.

[74] Transpower provided the expert opinion on 25 November 2022.

[75] GHD Advisory, "*GHD Expert Opinion Progress Review - Report on Asset Health and Risk Modelling*", (21 Oct 2023), page 1.

[76] GHD Advisory, "*GHD Expert Opinion Progress Review - Report on Asset Health and Risk Modelling*", (21 Oct 2023), page 3.

4.14 While the asset health and risk improvement initiatives for the specific asset classes identified by the RCP3 Verifier appear to have progressed well, GHD identified that there are a number of other key areas that Transpower could make further improvements such as:[77]

4.14.1 five asset categories where asset health improvement opportunities are available;

4.14.2 six asset categories where there are asset risk improvement opportunities available; and

4.14.3 improvements could be made to network risk understanding by developing Transpower's resilience analysis approach to assess fire risk, floods, and other high impact low probability (**HILP**) event exposures.

4.15 The GHD report also identified other asset health modelling considerations that we are likely to investigate further. Specifically, GHD noted that in some asset classes asset health models are based on asset age and had "not been calibrated against historical failure rate or replacement activity".[78]

Verifier view of Transpower's RCP4 asset health and risk modelling

4.16 The Verifier, in its RCP4 verification report, referenced the GHD expert opinion as a basis of its review of Transpower's capex forecasts. It also noted where Transpower had matured since the October 2022 review, stating that:[79]

> We have been cognisant of these findings contained in the GHD Advisory Expert Opinion Progress Review report and have noted any change of status in the element of Transpower's grid asset management system since October 2022. In accordance with the ToR, we have leveraged the findings from the Expert Opinion Progress Review report when evaluating the proposed base R&R capex across the asset portfolios and have noted this at respective Sections of this IV report.

4.17 The Verifier concluded that overall, Transpower's 'development in asset health modelling, impact modelling, criticality and risk-based decision-making frameworks demonstrated GEIP' noting that:

> We have observed that Transpower continues to mature its asset health and network risk (AHNR) modelling and has leveraged its maturing tools, data and AHNR knowledge to

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[77] GHD Advisory, "*GHD Expert Opinion Progress Review - Report on Asset Health and Risk Modelling*", (21 Oct 2023), Table 9, page 20.

[78] GHD Advisory, "*GHD Expert Opinion Progress Review - Report on Asset Health and Risk Modelling*", (21 Oct 2023), Appendix A, page 24.

[79] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 31.

identify appropriate levels of expenditure for RCP4 to maintain asset health and avoid any appreciable deterioration of network risk.

4.18 In each asset class that it reviewed the Verifier has referenced the GHD expert opinion as a guide to Transpower's asset health and risk modelling maturity. Where Transpower has progressed its modelling since the expert opinion was published, we will take this into account.

Our preliminary view of the maturity of Transpower's asset health and risk modelling

4.19 Transpower has made significant progress in its understanding of asset health and risk modelling since RCP2. This progress has been largely in response to the RCP3 Verifier recommending that Transpower mature this understanding, which we agreed with in our RCP3 decision.

4.20 Our investigation of Transpower's RCP4 capex proposal, and the asset health and network risk modelling that underpins it, will focus on how Transpower has tested its asset health models against observed condition data, the use of failure rate data, and other model inputs it has used, such as safety risk and resilience.

4.21 We will use the Verifier conclusions to inform our assessment of Transpower's proposal where appropriate, as these conclusions indicate where asset health and risk modelling is less mature and where expenditure forecasts are likely to be less reliable.

4.22 We will be assessing whether, in the absence of adequate failure rate data or condition data, Transpower has calibrated its asset health models with international data or observations of replaced asset condition. In other jurisdictions, where asset health modelling is a cornerstone of forecast asset replacement volumes, tuning asset health models with international failure rate data is considered good practice.

4.23 Finally, we will test the confidence limits of Transpower's asset health models. Asset health models that have been based on asset age and tuned using failure rate data, even if the failure rate data set is extensive, will have a confidence limit range, much like project cost estimations such as P50, and P90 for example.

4.24 We will focus on this issue as calibrating asset health models with known asset failure rate data and replaced asset condition will affect the 'tuning' of the asset health model failure curves, which will in turn affect predicted forecast replacement volumes.

4.25 We are encouraged that Transpower has been maturing its asset management modelling framework tools, and has begun using them to inform its expenditure forecasting, and work program decision making. We are considering how we might further encourage Transpower to progress this work as priority during RCP4.

4.26 One option is to require Transpower to provide information annually about how it is maturing its asset health and risk modelling. Another option is to require Transpower to engage external expert advice part-way through RCP4, to report on progress in this area, similar to what Transpower provided over RCP3.

We seek your views on Transpower's asset management practice

4.27 In addition to the areas of interest that we will be focussing our review on, we seek your views on key aspects of Transpower's RCP4 proposal asset management practice, and have some specific focus areas we would like you to consider in preparing your submission.

4.28 Improving Transpower's use and understanding of asset health and criticality has been an ongoing focus for us for some time as we see it as a key expenditure decision-making input.

4.29 We would like to understand your experience with asset health and criticality modelling that informs your asset investment decision making.

4.30 We are also interested in your views about whether it is reasonable to expect Transpower to publish more detailed modelling, when it submits a base capex proposal to us in future resets, that demonstrates how condition data and asset age informs asset health models, how the models are set up, in conjunction with other modelled inputs such as safety, and the links to the capital expenditure forecasts.

4.31 Transpower states in its RCP4 proposal that its forecast expenditure is to "maintain the service levels our customers expect".[80] In previous resets, the analytical link between capital investment or asset renewals has not been possible and quality has been set based on historical levels of observed quality.

4.32 In its RCP4 proposal Transpower is proposing a range of service measures, and we will be investigating whether Transpower is using its maturing asset health and risk modelling to inform these settings.

[80] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 2.3, page 14.

4.33	We would also like to hear if you have any other issues with aspects of Transpower's asset management practices that are not discussed here.

Chapter 5 Base capital expenditure forecast

Purpose of this chapter

5.1 This chapter discusses aspects of Transpower's proposed base capital expenditure (base capex), highlights key observations made by the Verifier, and includes our initial observations from our review of the Verifier's report, and Transpower's RCP4 proposal so far.

5.2 Setting appropriate capital expenditure allowances for Transpower in RCP4 is a key focus area for us because base capex allowances impact the revenue Transpower can recover from its customers during RCP4 and beyond.

5.3 The base capex allowance is a fungible pool of expenditure for capex projects or programmes. Transpower has discretion on how the money is spent. We will be setting the quantum of the base capex allowance, taking into account Transpower's proposed base capex projects for RCP4.

5.4 We seek your views on potential issues with Transpower's RCP4 base capex forecast. We discuss specific areas that we are exploring further with Transpower in setting the RCP4 base capex allowance and other RCP4 expenditure, in preparation for RCP5 and RCP6.

5.5 In this chapter we discuss:

5.5.1 how capex is approved using the Capex IM approvals mechanisms, and how base capex proposals fit within the Capex IM framework;

5.5.2 the composition of the RCP4 base capex forecast, and how this is different to the base capex forecast for RCP3;

5.5.3 the Verifier's view of Transpower's base capex forecast; and

5.5.4 our preliminary view of Transpower's base capex forecast after reviewing the Verifier's report, and Transpower's base capex proposal material so far.

5.6 We also pose specific questions where we seek your views to help inform our assessment of Transpower's RCP4 base capex proposal.

How capex is treated by the Capex IM

5.7 Transpower is required to apply the Capex IM when preparing and submitting capex proposals to us.[81] The Capex IM sets out:

5.7.1 the rules and processes for approving Transpower's capex;

5.7.2 the processes that we and Transpower must follow;

5.7.3 the information that Transpower must provide with its proposals; and

5.7.4 the evaluation criteria and approach that we will use in approving (or rejecting) capex proposals.

5.8 Our role under the Capex IM is to provide independent scrutiny, and where appropriate:

5.8.1 approve projects and programmes that are MCPs at any time before or during regulatory periods;[82,83]

5.8.2 set base capex allowances before each regulatory period, and specify possible base capex projects that are listed in the IPP as listed projects;[84,85] and

5.8.3 approve base capex proposals that are listed projects during regulatory periods.[86,87]

5.9 Base capex means capital expenditure that is:

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81 Commerce Act 1986, section 54S (2).

82 *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination* 2023 [2023] NZCC 39, (13 December 2023), clause 3.3.3, Part 6, Schedule C and Schedule G of the Capex IM.

83 Major capex means capex incurred to either meet the existing Grid Reliability Standards or that provide a net market benefit. MCPs are major projects where the cost is estimated to exceed the base capex threshold of $30 million. They provide transmission capacity enhancement to existing transmission assets or add new transmission capacity to the network (clause 1.1.5 of the Capex IM).

84 *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination* 2023 [2023] NZCC 39 (13 December 2023), Part 2 Subpart 2, Part 6, and Schedule A.

85 Base capex projects are those that involve the replacement or renewal of existing transmission primary or secondary assets – it can also include projects involving business support, and information and technology assets (clause 1.1.5 of the Capex IM).

86 *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination* 2023 [2023] NZCC 39, (13 December 2023), clause 3.2.3 and clause 6.1.1.

87 Listed projects are transmission asset replacement projects where the estimated project cost is likely to exceed the base capex threshold of $30 million. The Listed Project mechanism is used to mitigate project timing, scope, and cost uncertainties (clause 1.1.5 of the Capex IM).

5.9.1 incurred in relation to one or more of the following things:[88]

5.9.1.1 asset replacement and refurbishment;

5.9.1.2 business support;

5.9.1.3 information system and technology assets; and

5.9.2 not forecast to:[89]

5.9.2.1 exceed the base capex project threshold; or

5.9.2.2 be included in a programme whose aggregate forecast capital expenditure exceeds the base capex programme threshold.

5.10 The Capex IM sets out the process for Transpower to seek approval for MCPs and listed projects which exist outside this IPP price setting framework for regulatory periods. Transpower can lodge MCP and listed project proposals with us at any time during a regulatory period.[90,91]

5.11 Enhancement and development (**E&D**) projects are base capex projects that enhance transmission network capacity but individually are estimated to cost less than the base capex threshold of $30 million. E&D projects are part of the base capex approvals process.

5.12 Some E&D projects may have sufficiently uncertain costs and timing when a base capex proposal is submitted, that they cannot reasonably be included in the base capex allowance. Uncertainties of project cost, timing, and scope may be due to demand changes or new generation connection to the transmission network, for example.

5.13 To address these uncertainties, there is a range of reopener provisions in the Transpower IM that allow Transpower to seek additional funding for E&D capex projects that were uncertain at the time the base capex proposal was submitted.

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88 Part 1 cl.1.1.5 of the Capex IM.

89 Base capex also excludes capital expenditure that is incurred in relation to any right-of-use asset.

90 Clause 3.3.3(3) of the Capex IM for MCPs and clause 3.2.3 of the Capex IM for listed projects.

91 The MCP process requires Transpower to externally consult, seek transmission alternative options, consider long list and short list options, analyse the short list options using a net market benefit test, before selecting its preferred option for our approval. The Listed Project approvals process has less extensive external consultation and alternative option testing requirements.

5.14 Additionally, as part of our suite of IM Review decisions in December 2023, we introduced an E&D price-quality path reopener for ACA capacity capex projects that are forecast to cost between $10 million and the base capex threshold of $30 million.[92] ACA capacity projects forecast to cost under $10m can be included in either the base capex proposal as E&D capex, or in the mid-period E&D price-quality path reopener, as base capex.

5.15 In this chapter we refer to some of these regulatory mechanisms and their use by Transpower and us, as we discuss projects and programmes of work in the RCP4 base capex proposal.

The verification process and our proposed review of Transpower's base capex proposal

5.16 In our Process, framework, and approach paper we outlined our expenditure assessment approach on Transpower's RCP4 proposal, and the role of the verification process.[93]

5.17 The verification process will assist us to better focus our review of Transpower's proposal on areas where forecast expenditures and/or associated grid output measures are less likely to meet the expenditure outcome, and how Transpower's RCP3 performance initiatives have improved its proposal.

5.18 Having reviewed the verification report, we consider that it will assist external parties to have more confidence in Transpower's RCP4 proposal, and our review of that proposal, because it has:

5.18.1 provided useful contextual references about how Transpower compares with its Australian counterparts for a variety of metrics and measures;

5.18.2 assessed Transpower's asset management framework, including its processes around asset health modelling, and criticality;

5.18.3 tested Transpower's policies, planning standards, and the analysis assumptions that underpin the base capex expenditure forecast;

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[92] The ACA capacity mechanism was introduced in response to the Transmission Pricing Methodology changes made by the Electricity Authority on 1 April 2022. We discuss the introduction of the ACA capacity mechanism in the IM Review Transpower investment topic paper p. 79 available here.

[93] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), page 3, paragraph 3.19.

5.18.4 provided us with insights into how Transpower has compiled its base capex and opex forecast at an asset class level of detail, by testing business cases, and justifications of expenditure need and cost estimation;

5.18.5 reviewed Transpower's proposed RCP4 grid output measures, and made recommendations about where these may be improved; and

5.18.6 identified key issues that we may want to focus our attention on when we review the RCP4 proposal material in preparation for setting the RCP4 base capex allowance.

5.19 We are using the verification report findings to:

5.19.1 help narrow our focus of the base capex proposal for investigation; and

5.19.2 make judgements about what areas of the RCP4 base capex forecast is consistent with an expenditure outcome which represents the efficient costs of a prudent supplier of electricity transmission services.

5.20 In our assessment we will also be guided by our principle of proportionate scrutiny which we discussed in our Process, framework, and approach paper.[94]

Transpower proposes a 32% increase in base capex for RCP4

5.21 Transpower is proposing $2,250.2 million of base capex over RCP4. This is a 32% increase when compared with RCP3 ($1,698.9 million).[95] Table 5.1 sets out the RCP3 and proposed RCP4 expenditures for each base capex programme, excluding capitalised leases.

Table 5.1 RCP4 proposal expenditure and RCP3 comparison (constant $2022/2023)[96]

Expenditure programme	RCP3 expenditure ($m)	RCP4 expenditure ($m)	Variance (%)
Substations	$384.2	$509.1	33%
Buildings and grounds	$90.6	$89.3	-1%
Transmission lines	$515.0	$724.3	41%

[94] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), page 24, paragraphs 5.5 to 5.7.

[95] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023) , section 12.2, page 208.

[96] All values are from Transpower's RCP4 submission expenditure forecast modelling.

Expenditure programme	RCP3 expenditure ($m)	RCP4 expenditure ($m)	Variance (%)
HVDC and reactive assets	$109.4	$161.3	47%
Secondary assets	$233.8	$282.3	21%
E&D	$124.4	$111.7	-10%
Resilience	$0.5	$75.0	-
ICT capex	$160.9	$209.1	30%
Business support capex	$23.9	$34.7	45%
TOTAL	**$1,642.6**	**$2,196.7**[97]	**34%**

5.22 Transpower states in its RCP4 proposal that the key drivers for the proposed RCP4 base capex expenditure are:[98]

5.22.1 an ageing asset fleet, the majority of which was installed more than 60 years ago, requiring asset replacements, as life-extension strategies are no longer appropriate or cost effective;

5.22.2 increased workforce requirements and deliverability costs associated with the forecast significant increase in asset refurbishment and replacement volumes;

5.22.3 increased focus on resilience to mitigate major hazard event impact on the grid;

5.22.4 input cost increases pressure due to inflation, and increased material and equipment costs; and

5.22.5 electrification of process heat and transport, resulting in demand step changes, and new investments in solar and wind generation.

5.23 Transpower is also proposing we introduce what it terms 'uncertainty mechanisms' for resilience and enabling customer electrification, as capped UIOLI funds to address project timing, scope, and cost uncertainties. Transpower proposes that if the UIOLI funds are not spent, then they are not cost recovered from consumers.

5.24 Transpower is seeking UIOLI funding for:

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97 Transpower is also seeking $56.4 million for capitalised leases.

98 Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 4.2, page 32.

5.24.1 resilience capex ($126.7 million) that it states, "reflects a relatively early stage of our resilience planning process" although this has been subject to early analysis to test criticality, solution options including opex solutions, and initial cost-benefit analyses;[99] and

5.24.2 enabling customer capacity capex ($100 million) to bring forward connection asset replacements (e.g., replacing a transformer earlier than planned in order to replace it with a larger-capacity transformer), and add anticipatory connection assets capacity with a new or augmented connection.[100]

5.25 Transpower is estimating it will also need $261.5 million for Listed Projects.[101] Listed Projects are asset renewal projects with an estimated project cost that is estimated to exceed the base capex threshold.[102]

Verifier review of Transpower's RCP4 base capex proposal

5.26 The Verifier proceeded with Transpower's RCP4 proposal verification in March 2023, concluded with its final verification report on 12 September 2023, and the RCP4 proposal was submitted to us by Transpower on 21 November 2023. Since the verification was completed, Transpower has made modifications to its proposed base capex in the proposal, which we discuss in the next section of this chapter.

5.27 The Verifier reviewed all the identified programmes agreed by Transpower and the Commission, as set out in the verification terms of reference.[103,104] The Verifier also reviewed most of the non-identified expenditure programmes except for capitalised leases, and six investment cases in the ICT capex category.[105]

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[99] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023) , section 9.2, page 172.

[100] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023) , section 10.4, page 195.

[101] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023) , section 8.2.6, page 118.

[102] Under our 2023 IM Review decision, that will take effect from 1 April 2025, the Capex IM base capex threshold will increase from $20 million to $30 million.

[103] Commerce Commission, "*Deed relating to RCP4 independent verification*", Appendix 2 – Terms of reference, Appendix 2, paragraph 18.

[104] Identified programmes are base capex projects or programmes of work forecast to be undertaken by Transpower in RCP4, which were selected by reference to categories or criteria agreed between us and Transpower, prior to Transpower submitting its proposal. Non-identified programmes are those expenditure categories that were outside the agreed criteria for Identified Programmes in the Verifier's TOR.

[105] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page ii.

5.28 Excluding the proposed Listed Project expenditure and uncertainty mechanism capex, the Verifier reviewed 96.6% of Transpower's pre-submission base capex expenditure that was practicably able to be reviewed, and verified 94.5% of that expenditure.

5.29 In general, the Verifier was satisfied that the majority of Transpower's base capex proposal was reasonable, stating that:[106]

> Overall, we find that the proposed expenditure amounts that we reviewed and accepted are consistent with an expenditure outcome which represents the efficient costs of a prudent electricity transmission services supplier having regard to GEIP and the evaluation criteria.

5.30 The Verifier conclusions reflect the improvements Transpower has been making in its asset health and risk modelling. The increased maturity levels of this modelling make it much more certain that asset-related expenditure forecasts can be relied on.

5.31 Some of Transpower's asset health and risk models are more mature than others, and this may lead us to setting RCP4 improvement initiatives similar to those we requested for RCP3.

5.32 The Verifier concluded that for base capex we should focus on Transpower's application of its proposed UIOLI mechanism, stating that:[107]

> The Commission should focus on the implementation of this mechanism pertaining to exclusive separation of expenditure, tracking and reporting its delivery, its cost recovery pathway, impact to future asset refurbishment and replacement activities, current asset health scores and service performance, and timing of the MAR adjustments.

5.33 In our recent IM Review process, we considered UIOLI mechanisms for Transpower as a feature in the input methodologies. However, we decided that the use of funding mechanisms like this needed to be considered on a case-by-case basis at each reset.[108]

5.34	We will be considering whether to include UIOLI expenditure in our RCP4 draft decision. Our review of UIOLI funding will consider the extent of the uncertainties that the UIOLI funds intend to mitigate; and

[106] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page ii.

[107] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page ix.

[108] See p. 89 of the Transpower investment topic paper here.

5.35	whether Transpower could have reasonably planned for these. We are interested in your views on Transpower's UIOLI funding proposal.

Our preliminary view of Transpower's base capex proposal

Asset replacement and asset refurbishment expenditure

5.36 Over RCP3, Transpower has been progressing its asset health and risk modelling for a range of asset classes, and many of these are now in a mature state and can be relied upon to adequately inform the expenditure forecasts.

5.37 In asset classes where asset health model maturity is low, we will be guided by the Verifier recommendations, and will explore whether improving these models should be set as RCP4 improvement initiatives as these models progress towards maturity.

5.38 Although the Verifier has verified virtually all of the replacement and refurbishment expenditures, the level of our scrutiny, while remaining proportionate, will likely be greater for those expenditure categories derived from less mature models.

5.39 We will be exploring how Transpower is tuning the asset health model failure curves, to ensure that, to the extent possible, the models are not resulting in material over or under forecast estimates.

Enhancement and development expenditure

5.40 The Verifier tested how Transpower justified its E&D capex programme, and how it based its forecast on the likelihood of certain projects proceeding over the RCP4 period. This is similar to the likelihood analysis Transpower carried out in its RCP3 proposal, and the Verifier agreed with the approach.

5.41 The introduction of the mid-period E&D reopener has mitigated much of the forecasting risk associated with projects with uncertain costs, timing, or preferred solution.

Resilience expenditure

5.42 The Verifier reviewed $53.2 million of resilience capex that Transpower had proposed using a UIOLI funding mechanism. The Verifier accepted this resilience capex as being verified despite project scope being "uncertain at the time of the base capex proposal submission".[109]

5.43 The Verifier also reviewed and verified, resilience capex that Transpower had embedded within the various portfolios of base capital and operating expenditure (such as grid maintenance, ICT opex, replacement and renewals capex and ICT capex). However, it was unclear how the Verifier determined that this capex was prudent and efficient.

5.44 In its proposal, Transpower has proposed $87.2 million of resilience capex and opex ($75 million is base capex and the remainder is for opex solutions) and increased its estimate of resilience capex UIOLI funding from to $53.2 million to $126.7 million.

5.45 We will be focussing on how Transpower is approaching resilience, and will be exploring how it is identifying and quantifying major event risk, and the economic justification for mitigation measures.

5.46 We agree with Transpower that resilience planning should be pro-active. We also consider that resilience planning should be a business-as-usual activity, and a core consideration in asset management and planning decision making.

5.47 Previously, Transpower proposed, and had approved, resilience capex in its RCP2 proposal, and in the 2012 Upper South Island MCP. However, there did not appear to be any explicit resilience capex in Transpower's RCP3 proposal or any RCP3 strategy to consider major event exposures on a systematic and ongoing basis.[110]

5.48 We are encouraged that Transpower appears to have developed a resilience strategy as part of its RCP4 proposal. This should help ensure that major event planning is enduring, and that transmission network resilience issues can be adequately and systematically identified, prioritised, and risks mitigated to the extent that it is economic to do so.

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[109] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 420.

[110] Transpower New Zealand Ltd, *Expenditure Proposal - Regulatory Control Period 2 - December 2013*, page 68, and Transpower New Zealand Ltd, *Upper South Island Reliability Stage 1 Capex Proposal June 2012*.

Potential areas of focus

5.49 Alongside the Verifier suggestions about what we should focus on, and following our preliminary review of the Verifier report and Transpower's proposal, we also intend to investigate these aspects of the RCP4 capex programme:

5.49.1 ICT capex:

5.49.1.1 whether the ICT TransGo project capex should be subject to the base capex low incentive rate of 15%, or the standard base capex incentive rate due to project cost uncertainties; and

5.49.1.2 a top-down review of the unreviewed/unverified capex in the ICT capex categories;

5.49.2 review Transpower's tower painting and structure interventions, and how expert advice has informed its corrosion management strategy, as this capex is 60% of the total capex in the transmission lines work programme;

5.49.3 review Transpower's proposed UIOLI fund of $100 million for customer electrification; and

5.49.4 a review of the unreviewed/unverified capex for capitalised leases.

5.50 Finally, since verification was completed in September 2023, Transpower has modified its proposal. Where we identify this has occurred, we will test increases against the original Verifier findings to ascertain the reasons for the change, whether any increases are justified, and consistent with the Capex IM evaluation criteria.[111]

We seek your views on aspects of Transpower's RCP4 base capex proposal

5.51 In addition to the areas of interest we will be focussing our review on, we would also like to hear from you if you have other comments on aspects of Transpower's RCP4 base capex forecast that are not discussed here, but that you consider merit further analysis.

[111] For example, in the power transformers asset class the verifier reviewed $154.1 million ($2021/2022) of proposed capex and verified $144.1 million ($2021/2022) of that capex. In its proposal Transpower has modified its programme in this asset class and is now seeking $196.2 million ($2022/2023).

Chapter 6 Operating expenditure forecast

Purpose of this chapter

6.1 This chapter discusses Transpower's proposed RCP4 opex allowance.

6.2 The approved opex allowance has a more immediate effect on Transpower's regulated revenues, as opex is recovered in revenues in the year in which the cost is incurred, whereas capex is recovered over time during the life of the asset.

6.3 We will consider this expenditure in the context of Transpower's changes in activities over time, which includes expected future challenges, and change in work profile in RCP5 and RCP6.

6.4 In this chapter we discuss:

6.4.1 Transpower's approach to opex forecasting;

6.4.2 the Verifier's view of Transpower's proposed opex; and

6.4.3 our preliminary views on Transpower's proposed opex allowance, the efficiency of the 'base year', and the proposed levels of expenditure in the Insurance, ICT, Grid maintenance, and Asset Management and Operations (**AM&O**) portfolios.

6.5 We also pose specific questions where we seek your views to assist us in our evaluation of Transpower's proposed opex.

Our approach to assessing Transpower's opex

6.6 In our Process, framework, and approach paper we explained that "in contrast to base capex, there is no input methodology that sets out how we should determine or evaluate IPP proposal opex".[112]

6.7 However, we considered the opex assessment criteria:[113]

> should not be materially different to the criteria that apply to base capex, particularly given the need to direct capex towards achieving cost-effective and efficient solutions, and the potential cost trade-offs between capex and opex that this implies.

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[112] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), paragraph 5.24.

[113] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), paragraph 5.25.

6.8 We concluded that consistent with our approach to assessing base capex, in assessing opex we would be guided by:[114]

6.8.1 the extent to which, what Transpower proposes, will promote the purpose of Part 4 of the Act;

6.8.2 where they can be usefully applied to opex, the base capex evaluation criteria; and

6.8.3 how Transpower has performed against the opex incremental rolling incentive scheme (**IRIS**) which seeks to incentivise opex efficiency.

6.9 In considering the extent to which Transpower's opex proposal promotes the Part 4 purpose, we will be guided by whether Transpower's proposal is consistent with an expenditure outcome which represents the efficient costs of a prudent supplier.

Transpower used a base-step-trend methodology to forecast opex

Opex overview

6.10 Transpower is proposing $1,957.7 million of opex over RCP4. This is a 19.9% increase compared with sum of RCP3 actual expenditure to date, and what Transpower is forecasting to spend by the end of RCP3. Table 6.1 sets out the RCP3 and proposed RCP4 expenditures for each opex programme.

Table 6.1: RCP4 proposal expenditure and comparison with RCP3 (constant $2022/2023)[115]

Expenditure programme	RCP3 expenditure ($m)	RCP4 expenditure ($m)	Variance (%)
Preventive Maintenance	225.3	232.6	3.2%
Predictive Maintenance	376.7	428.2	13.7%
Corrective Maintenance	24.0	23.9	-0.4%
Proactive Maintenance	4.3	5.4	25.6%
Resilience	-	12.2	-
Asset Management and Operations	375.6	461.8	22.9%
Sustainability	0.5	2.4	380.0%

[114] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), paragraph 5.26.

[115] All values are from Transpower's RCP4 submission expenditure forecast modelling – Document RTRM001-C-RT01.

Expenditure programme	RCP3 expenditure ($m)	RCP4 expenditure ($m)	Variance (%)
Business Support	286	320.1	11.9%
ICT Opex	181.1	232.6	28.4%
ICT SaaS	26.4	57.4	117.4%
Insurance	132.7	181.1	36.5%
Total	**1,632.6**	**1,957.6**	**19.9%**

6.11 In developing its proposed RCP4 opex forecasts, Transpower used a base-step-trend forecasting methodology,[116] which it explained as follows:[117]

> For most of our opex forecasts we have adopted a base-step-trend framework. Base-step-trend forecasting is generally appropriate for expenditure that is recurring and assumes that historical 'revealed' expenditure provides a suitable starting point for a forecast requirement. This revealed expenditure approach works alongside the incremental rolling incentive scheme that the Commission imposes. It is designed to ensure we are incentivised to innovate and implement efficiencies as they are identified. This provides confidence to the Commission and stakeholders that our base year is efficient.
>
> The base-step trend approach involves the following main components.
>
> — Base year – identifying an efficient base year, typically the most recent year for which actual opex data is available. This includes assessing the extent to which the base year is relatively efficient. The base year is adjusted for any atypical cost items.
>
> — Step changes – required to meet the needs of the network or to allow for external requirements, and which are not already captured within the scope of the base amount.
>
> — Trends – these reflect expected changes in cost due to output growth. It can also include adjustments for ongoing productivity and/or cost efficiency.

6.12 In assessing the efficiency of its base level opex, Transpower considered that:

[116] The base-step-trend methodology has been applied to the opex forecasts with the exception of insurance opex and preventive maintenance opex, which is partly forecast using a bottom up approach, combining maintenance schedules from Maximo, Transpower's operational asset register and maintenance management tool.

[117] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 5.3.4, page 56.

> Base-step-trend forecasting is generally appropriate for expenditure that is recurring and assumes that historical 'revealed' expenditure provides a suitable starting point for a forecast requirement. This revealed expenditure approach works alongside the incremental rolling incentive scheme that the Commission imposes. It is designed to ensure we are incentivised to innovate and implement efficiencies as they are identified. This provides confidence to the Commission and stakeholders that our base year is efficient.

6.13 Transpower undertook historical trend analysis to determine if the base year is efficient. In general, it looked at the historical average opex, and considered how the proposed base year compares to the historical average levels of opex.

Verifier review of RCP4 forecast operating expenditure

6.14 The Verifier reviewed all of Transpower's proposed opex ($1,797.6 million). It considered all of the proposed opex ($1,797.6 million) to be consistent with GEIP.[118]

6.15 Although it concluded that all of the proposed opex was consistent with GEIP, and that it was satisfied with most of Transpower's proposed opex step changes and proposed trend assumptions over the course of RCP4, the Verifier was unable to confirm that Transpower's proposed base level opex is representative of an efficient base year.

6.16 In its conclusion on the base year efficiency, the Verifier noted that:[119]

> The base year approach presented by Transpower does not have a clear mechanism for confirming that it is an 'efficient' year. Instead Transpower have put forward the following rationale as justification for the selection of 2021/22 as the base year:
>
> — **Use of actual costs and not estimated costs.** To establish that 21/22 is an efficient year, Transpower wanted to use a complete set of actual cost data. Transpower has confirmed that the 21/22 is actual data which means that there are no cost estimates used in the base year.
>
> — **The most up to date costs.** As the cost of goods and materials fluctuates over time, it is important that actual costs are the most up to date. The reason for this is to capture movement in prices. Therefore, the costs represent 'normal' costs.
>
> — **Cost savings in RCP2.** By selecting the most recent year with complete data the base year by definition will incorporate any efficiencies realised by previous initiatives. The identification of previous cost savings is a demonstration of a focus on minimising costs across opex portfolios. However, to recognise that previous

[118] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 4.

[119] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 304.

initiatives have reduced costs or improved efficiencies the expenditure changes from these initiatives need to be quantified.

— **Historical trending.** To get an appreciation of the base year, the total opex in that year is compared to prior years (usually the previous five years). This provides a relative comparison of the base year and recent history. Where Transpower has used the base-step-trend method they have compared the actual base year costs to the previous five to seven years to demonstrate that the actual base year costs are not materially different from the average previous expenditure.

The above arguments are both logical and reasonable. As a result, we consider that 2021/22 is an appropriate base year for Transpower to select and use for base-step-trend forecasting. However, with the information presented to us we are not able to verify that the 2021/22 year is an efficient year. However, given the previous years that Transpower could have used were either in RCP2 or more significantly impacted by covid, this year is on balance the most suitable to use as the base year.

6.17 In addition to the Verifier's general finding that it was unable to confirm cost efficiency of the base level opex, the Verifier also identified there may be categories of opex (such as ICT opex and business support) that may need to be scaled down if there is a deliverability issue, eg, if Transpower is not able to recruit the necessary levels of FTEs or if the capex work programme is delayed.

Our preliminary view of Transpower's RCP4 forecast operating expenditure

6.18 The Verifier scrutinised Transpower's opex proposal, including Transpower's use of the base-step-trend approach in developing its opex forecast. The Verifier has undertaken a thorough review of the steps and trends used by Transpower. We consider the Verifier report provides a good basis to inform our review.

6.19 Although we consider the Verifier's report provides a good basis for our review, we have not formed a view yet on whether the proposed opex portfolios reflect prudent and efficient expenditure. We have identified expenditure areas we would like to further investigate.

Base year efficiency

6.20 Transpower proposed a different base year (2022/23) to the base year assessed by the Verifier (2021/22). The 2022/2023 base year opex (along with other changes made by Transpower to the proposal) of results in a higher overall opex expenditure proposal over the RCP4 period of $1,957.7 million, compared to $1,920.1 million using the 2021/22 base year value.[120, 121]

[120] Figures in constant $ 2022/2023.
[121] See Table 3.2 of this paper.

6.21 We have not yet formed a view about whether Transpower's 2022/2023 opex is cost efficient, and in our review of the proposal, will consider if this represents an efficient base year.

6.22 We are considering approaches for assessing Transpower's proposed base year opex. Our preferred option is to take a top-down assessment approach and assess whether atypical costs have been removed from the proposed base year expenditure, and whether the proposed base year is of a reasonable level compared to past performance. We will also rely on the IRIS mechanism to assess whether true efficiency gains have been revealed.

Insurance opex

6.23 Transpower's insurance coverage is an element of its asset and network risk management strategy. Expenditure within this category will influence risk and, as with all opex, it will directly affect Transpower's revenue.

6.24 Transpower's insurance coverage is provided through a combination of externally insured policies, and self-insured policies. Transpower's self-insured policies are insured through its subsidiary captive insurer, Risk Reinsurance Limited (**RRL**).

6.25 Transpower is proposing a 36% increase in insurance opex compared to RCP3.

6.26 This forecast is based on actuarial and broker advice to Transpower, and can be described under a base-step-trend approach as:

6.26.1 taking 2022/23 as a base year expenditure of $136.9 million;

6.26.2 a step change of $9.4 million driven by increase in risk premiums; and

6.26.3 trend changes amounting to $34.8 million across RCP4 driven by asset and replacement cost growth and actuarial forecasts, and an increase in premium prices due to CPI effects.

6.27 We acknowledge that insurance opex is driven by premiums as set by the insurance market, which are largely outside of Transpower's control.

6.28 We understand that a benefit of maintaining RRL as a captive subsidiary is that it enables Transpower to negotiate better terms on insurance coverage that it places on the external market.

6.29 We are also interested in exploring the relationship between Transpower's resilience expenditure and insurance expenditure. Our areas of focus include the extent to which insurance premiums have been reduced or contained due to past resilience expenditure.

6.30 The Verifier has identified there is a $0.5 million expenditure in the 2022/23 year, which does not have any explanation. We would like to test this.

6.31 We are also interested in understanding whether the lowering of the catastrophic event reopener threshold, following the recently completed IM Review, should change Transpower's insurance cover. We will investigate whether the lower dollar value threshold should result in lower insurance premiums or deductibles for external insurance.

ICT opex

6.32 Transpower is proposing a total ICT opex portfolio (ICT opex including SaaS opex) expenditure of $290.0 in RCP4,[122] which is a 39.8% increase over total ICT opex in RCP3 (see Table 6.2).

Table 6.2 Proposed ICT opex RCP3 compared to RCP4 ($m 2022/2023 constant)

Expenditure programme	RCP3 expenditure ($m)	RCP4 expenditure ($m)	Variance (%)
ICT Opex (underlying)	181.1	232.6	28.4%
ICT SaaS	26.4	57.4	117.4%
ICT opex total	207.5	290.0	39.8%

6.33 The forecast ICT opex increase is primarily driven by the following factors, as identified by Transpower:[123]

> Key changes for RCP4 compared with RCP3 include:
>
> - our investments in data and analytics and building information modelling capabilities are expected to drive an increase in licencing and software-as-a-service subscriptions
> - the modernisation of our data centre services will increase cloud infrastructure costs; this increase will be offset by a reduction in hosting costs and a reduced need to replace some of the ageing assets
> - increases in licence costs are driven by new capabilities for applications

[122] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), table 29, page 133.

[123] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 8.3.4, page 129.

- following the TransGO Refresh, the opex of running our telecommunications network will increase, driven by replacement of our radios and new core network capacity.

6.34 We understand that recategorization of software as a service (**SaaS**) under international financial reporting standards (**IFRS**) from capex to opex will result in a large step change in ICT opex. Apart from that explanation for increased proposed expenditure, our review is likely to focus on the increase in what is termed 'underlying ICT opex' (i.e., ICT opex excluding SaaS opex), which is increasing by 28.4%.

6.35 We are particularly interested in exploring the increase in underlying ICT opex given that Transpower has historically been underspending ICT opex when comparing forecast vs actual expenditure.

6.36 The Verifier noted that:[124]

> The move to SaaS is a strategic driver for the Data Centre, as a move away from server-based software to cloud means that the servers, and data centre are no longer needed. For clarity, it is envisaged that some software packages will not transition to a SaaS format and a data centre will still be needed, however this may be a scaled back version of the current infrastructure.
>
> The justification for the move to SaaS is to meet the long-term strategic fit for Transpower, and the desire to reduce the need for Data Centres, but also a key enabler for Transpower infrastructure and that it increases reliability, productivity, and efficient use of software licences.

6.37 Given this relationship between SaaS opex and ICT Capex, we may assess SaaS expenditure in light of our assessment of ICT Capex.

6.38 The verifier also identified that outsourced services and licence trends are predominantly driven by an increasing number of FTEs and/or contractors. If the forecast FTE and Contractor numbers are not realised, then the ICT opex may need to be scaled back proportionally in the relevant opex categories.[125] We will assess ICT opex in light of the wider RCP4 programme deliverability discussion in Chapter 8.

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[124] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 379.

[125] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 360.

Grid maintenance

6.39 Transpower has moved from a legacy time-based maintenance approach to a risk-based maintenance approach. The industry consensus is that switching to a risk-based maintenance approach reduces maintenance costs. We are interested in understanding whether this switch has resulted in expenditure efficiencies.

6.40 Transpower has proposed a 35% increase in replacement and refurbishment expenditure, and is also forecasting an increase in grid maintenance opex, with a 13.7% increase in predictive maintenance expenditure.

6.41 We would expect Transpower's grid maintenance opex to decrease given that replacement and refurbishment capex should improve Transpower's asset age profile, which in turn should reduce the need for maintenance.

6.42 Transpower's transmission line length and substation numbers have not increased significantly, which should not necessarily increase the amount of maintenance required. We will investigate the reasons for these increases and why grid maintenance opex forecasts are not reducing.

6.43 We will also investigate whether we should be seeing greater efficiency gains in maintenance opex. However, based on preliminary analysis, Transpower opex per kilometre of transmission line and substation opex per substation site appears to remain relatively constant when adjusted using CPI.[126]

Asset Management and Operations

6.44 Transpower is proposing a 23% increase in AM&O expenditure from RCP3 to RCP4.

6.45 Transpower's justification for its proposed increased AM&O expenditure, is that it requires additional FTEs to support the increased forecast work programme and customer inquiries.

6.46 We are interested in whether the increase in AM&O expenditure is reflective of the increased forecast work programme Transpower is proposing, and we will assess this expenditure in light of our capex assessment to determine whether the level of expenditure is prudent and efficient.

[126] Note that adjusting the expenditure using CPI, the expenditure remains relatively flat but if using PPI to adjust for real value, real levels of opex are decreasing.

6.47 Transpower has proposed to include instantaneous reserve event charges in the AM&O opex portfolio. We will scrutinise whether this charge should be passed onto consumers or whether Transpower should bear these event costs if the policy intent is to provide an incentive to better manage instantaneous reserve events.

FTEs for Asset Management and Operations and Business support

6.48 A relevant question regards Transpower's ability to deliver the increased level of work expected over RCP4 and subsequent periods, given a tight labour market both domestically and internationally. This will affect Transpower's ability to recruit the forecast FTE numbers, and the delivery of work within some of the opex portfolio. The Verifier raised this as a key concern.

6.49 This FTE recruiting issue as it affects the proposed RCP4 work programme is further discussed in Chapter 8 and is expected to continue to be a key issue in our review.

6.50 If Transpower does not have the capability to deliver the RCP4 work programme, deferral may produce an undesirable change in the risk profile of the asset base, with asset replacement under-delivery rewarded through the incentive mechanism.

6.51 The Verifier also identified that some opex portfolio expenditures may require a proportional decrease if Transpower is unable to recruit the required FTEs, or if Transpower is unable to deliver the planned work programme.

6.52 We are interested in further exploring how Transpower intends to mitigate the risks and associated consequences of not being able to deliver and recruit the required FTEs. We may assess the expenditure allowance against this deliverability concern.

Modelling of staffing requirements

6.53 The Verifier has identified an issue where Transpower's work force planning model has been over forecasting the number of FTEs required.[127] Transpower has noted that a bottom-up and top-down review of the model has been undertaken.

[127] See for example GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 83.

6.54 We will be further investigating this model to better understand it. For example, how it tests sensitivities under the workforce planning model, and whether the model still over-estimates FTEs.

New opex items

6.55 Transpower has proposed opex for resilience of $12.2 million, and sustainability of $2.4 million. We will investigate whether this expenditure has been double counted in other expenditure categories, and whether it should be approved in the opex allowance.

Updates to the proposal following the verification process

6.56 Since verification was completed in September 2023, Transpower has modified its proposal. Where we identify this has occurred, we will test increases against the original Verifier findings to ascertain the reasons for the change, and whether any increases are justified and consistent with the Capex IM evaluation criteria.[128]

We seek your views on Transpower's proposed opex forecast

6.57 We welcome your views on how Transpower has developed its proposed opex forecasts, and any areas you consider we should particularly focus on. We list below some specific questions we invite you to consider in preparing your submission.

Base year efficiency

6.58 Is there any further analysis you suggest we could carry out to assess whether the proposed base level of opex is efficient?

6.59 Do you consider the historic trend in opex to be reflective of Transpower actively pursuing efficiency gains, or would you expect to see a lower rate of increase, or even a downwards trend in opex?

6.60 Do you consider the proposed base level of opex to be reflective of Transpower actively pursuing efficiency gains in light of its historic opex trend?

Business support and AM&O FTEs

6.61 Do you consider Transpower is likely to be able to recruit and retain its forecasted number of FTEs in the business support and AM&O categories given the likely competition for resource in the electricity industry?

[128] For example, in asset management and operations opex, the verifier reviewed and verified $408.9 million ($2021/2022) of proposed opex. In its proposal, Transpower has modified its portfolio expenditure and is now seeking $461.8 million.

Grid maintenance

6.62 Based on any experience you may have in switching to a risk-based maintenance approach, have you experienced any resulting efficiencies/cost reductions as a result? Typically, what level of reductions would we expect to see moving to the risk-based maintenance approach?

Proposed insurance opex

6.63 Given Transpower's increased focus on network and asset resilience, and its proposed resilience capex over RCP4, would you expect this to affect how Transpower sets its insurance? Would you expect Transpower's insurance cover to decrease as a consequence of this proposed resilience capex, given it will be mitigating resilience risk generally?

ICT opex

6.64 The proposed ICT capex is $266.6 million. Given the amount forecasted to be spent on ICT capex, do you consider the forecast SaaS amount going into opex prudent and efficient? Should we be able to see other resulting expenditure trade-offs? Are industry participants seeing capex reductions from greater reliance on SaaS?

Other matters

6.65 In addition to the areas of interest we will be focussing our review on are there any other aspects of Transpower's RCP4 opex forecast that are not discussed here, but that you consider merit comment?

Chapter 7 Grid output measures

Purpose of this chapter

7.1 This chapter focusses on the grid output measures Transpower has proposed for RCP4. The Capex IM allows Transpower to propose, and for us to set, certain types of grid output measures, such as asset performance measures, grid performance measures, asset capability grid performance measures, and asset health grid output measures.[129]

7.2 We discuss the implications of the RCP4 grid output measures and explain why these are important for ensuring that Transpower has incentives to provide transmission services at a quality that reflects consumers' demands.

7.3 In this chapter we discuss:

7.3.1 our requirement to set grid output measures, and our ability to set quality standards and incentives, and Transpower's ability to propose grid output measures;

7.3.2 a summary of the grid output measures Transpower is proposing over RCP4, and the key changes it is proposing compared to the RCP3 measures; and

7.3.3 an analysis of the main changes to grid output measures Transpower is proposing.

7.4 We also pose specific questions where we seek your views on Transpower's proposed RCP4 grid output measures.

[129] *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023* [2023] NZCC 39, (13 December 2023), clause 2.2.2.

Background and context

We must set quality standards and may set quality incentives for Transpower

7.5 As part of determining Transpower's IPP, we must set quality standards, and those standards are enforceable under the Act.[130] We determine how the quality standards we set for Transpower are prescribed, but those standards must be based on, and be consistent with, any quality standards for Transpower as set by the Electricity Authority under the Code.[131]

7.6 In addition, we may set incentives for Transpower to maintain or improve its quality of supply, and those incentives may, without limitation, be financial or non-financial. For example, financial incentives could include revenue-linked rewards and penalties if Transpower exceeds or fails to meet quality standards, and/or consumer compensation schemes where Transpower is required to pay compensation amounts for failing to meet standards of performance. Non-financial incentives could include additional reporting requirements if Transpower fails to meet a quality standard.[132]

7.7 We may also provide non-financial incentives for Transpower to maintain or improve quality of supply by requiring Transpower to disclose information about its performance more generally.[133] Such information disclosure requirements could be included in the IPP determination or in the information disclosure (**ID**) determination applying to Transpower.

7.8 In setting the quality standards, quality incentives, or quality-related disclosure requirements, we are primarily seeking to provide Transpower with incentives to provide services at a quality that reflects consumer demands, in line with the Part 4 purpose.

[130] Sections 53M(3), 87 and 87B of the Act. If the court orders Transpower to pay a penalty for contravening a quality standard under s 87, the court may, in addition, order Transpower to pay compensation to any 'aggrieved person', ie, a person who has suffered, or is likely to suffer, loss or damage as a result of the contravention (s 87A of the Act).

[131] Section 54V(6) of the Act.

[132] Section 53M(2) of the Act.

[133] Section 53C(2)(i) of the Act.

Transpower is required to propose grid output measures and we must assess them

7.9 Consistent with our ability to set incentives for maintaining quality that consumers demand, the Capex IM requires Transpower to propose, and us to set, measures relating to quality referred to as 'grid output measures'.[134]

7.10 The Capex IM provides for two types of grid output measures: revenue linked, and non-revenue linked. Under any revenue-linked grid output measure, Transpower will be financially rewarded for outperforming performance targets and penalised for underperforming performance targets.

7.11 For the revenue-linked grid output measures, we determine:[135]

7.11.1 grid output targets;

7.11.2 caps – to limit the amount of positive revenue adjustment;

7.11.3 collars – to limit the amount of negative revenue adjustment; and

7.11.4 grid output incentive rates – the amount of money at risk for each unit of output between the cap and the collar.

7.12 Non-revenue linked measures might include, for example, specific asset health and condition reporting, or asset replacement volume targets. Transpower could be provided with the flexibility to develop and vary these measures and be required to report on them annually.

7.13 In addition to setting grid output measures, we will also determine which elements of those measures will be quality standards for the purposes of compliance with the Act. Quality standards set by us may differ from the grid output measures proposed by Transpower, and Transpower is not required to propose any quality standards to be associated with its grid output measures in its proposal.

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[134] *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023* [2023] NZCC 39, (13 December 2023), clauses 2.2.1(3) and 2.2.2. We must apply the criteria in Schedule A, clauses A5-A7 of the Capex IM, which include the extent to which each measure is a 72ecognized measure of risk in the supply and performance of electricity transmission services, and the relationship between the grid output measure and expenditure by Transpower.

[135] *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023* [2023] NZCC 39, (13 December 2023), clause 2.2.2(1)(d).

7.14 For revenue-linked grid output measures, Transpower will be rewarded for outperforming the performance targets, while being penalised for underperforming under the incentive scheme.[136] We may set the associated quality standard at the level of the target, collar or cap, or at any other level which we consider sets an appropriate mandatory standard to provide additional incentive through the risk of enforcement action under the Act.

7.15 Therefore, it would be possible in a case of underperformance for Transpower to be exposed to both a financial penalty under the grid output measure for the underperformance and a statutory penalty under the Act for non-compliance with the standard. The extent of that dual effect will depend on the relationship between the value used to set the quality standard and the values set for the target and the collar under the grid output measure.

7.16 Under the quality incentive scheme it might be appropriate to set the collar for a particular grid output measure at one level, to potentially limit the extent of Transpower's financial exposure under the scheme, but the quality standard for that measure at a less stringent level. Doing so could recognise that performance at the collar would not be of sufficient concern to warrant potential enforcement action. Nonetheless, the quality standard for that measure would be set at a level to ensure there is some further check on particularly poor performance—i.e., performance significantly worse than that reflected by the collar.

Grid output measures in RCP3

7.17 The grid output measures we set for RCP3 comprised both service performance and asset health measures, and included a mix of revenue linked measures, non-revenue linked measures, and reporting only measures.

7.18 The RCP3 service performance measures we set included measures of grid performance (including the number and duration of interruptions across different grid points of supply), and measure of asset performance (including the availability of key grid assets and return to service timeliness).

7.19 We also set quality standards in RCP3 related to selected asset health measures as a proxy for functional asset risk modelling, and a forward-looking measure of potential quality outcomes.

[136] The incentive reward or penalty applies up until the cap or collar is reached and where no further reward or penalty will apply.

7.20 Finally, we introduced a requirement for Transpower to provide us with updated information over RCP3 about asset, and network risk modelling progress for selected asset classes.

Grid output measures Transpower is proposing for RCP4

7.21 Transpower is proposing a refresh of its RCP3 measures which we have summarised in Table 7.1.

7.22 Of the nine measures we set for RCP3, Transpower is proposing it should retain two without any changes, retain five with changes, and discontinue two. It is also proposing three new measures.[137]

7.23 The proposed removal of the Grid Performance Momentary interruptions (**GPM**), and AP5 measures is in response to Transpower customers reporting they do not use these measures.

7.24 Transpower has also proposed the introduction of new measures for energy not served, and customer service level. These would provide insights into other areas of focus which were previously not included.

7.25 Transpower states that these changes reflect its consultation with customers and stakeholders.[138]Table 7.1 Proposed RCP4 grid output measures

[137] For further information, see Transpower New Zealand Limited "*Service Measures Report 2023*", (November 2023).

[138] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 7, page 72.

Table 7.1 Proposed RCP4 grid output measures

Measure name	Revenue at risk ($m)[139]	RCP4 measure description	Summary of main changes proposed by Transpower
GP1 – Grid Performance 1	**8.3**	Number of unplanned interruptions across all POS in a sub-category during a disclosure year	Retain with changes. Key changes include: • update of PoS categorisation to be based on forecast load; • use of historic averages for unplanned interruptions; and • exclusion of automatic underfrequency load shedding.
GP2 – Grid Performance 2	**8.3**	Average duration of unplanned interruptions greater than one minute, across all POS in a sub-category during a disclosure year	
GPM – Grid Performance Momentary interruptions	**-**	Number of momentary unplanned interruptions, <1min	Discontinue use of measure. Both stakeholders and Independent Verifier supported removing the measure.
GP3: Energy not served (previously labelled NR)	**-**	Amount of energy demand that is not supplied due to a transmission interruption to supply.	Introduce new reporting only measure. Both stakeholders and Independent Verifier supported the introduction of the measures. Transpower has adjusted the measure following feedback.[140]
AP1: Asset Performance 1 – HVDC capacity availability	**0.5**	HVDC energy availability (%) of the inter-island HVDC system	Retain with changes. Key changes include: • removing availability affected by major capex or listed projects; • including threshold limit for single events; • introducing pooling (similar to GP1 & GP2); and • for AP2 only, removing quality standard (preferred option) or using forecast model to set targets using forecast expenditure.
AP2: Asset Performance 2 – HVAC selected asset availability	**1.0**	Average percentage of time HVAC assets are available during a disclosure year	

Measure name	Revenue at risk ($m)	RCP4 measure description	Summary of main changes proposed by Transpower
AP3: Asset Performance 3 – Return to service	-	Extent that Transpower keeps to planned outage times in relation to selected HVAC assets	Retain measure. Both stakeholders and Independent Verifier supported keeping the measure as they are.
AP4: Asset Performance 4 – Return to services communications	-	Extent that Transpower communicates delays to planned outage return times in relation to selected HVAC assets	
AP5: Asset Performance 5 – N-security reporting	-	Extent that Transpower has placed customers on N-security of supply.	Discontinue use of measure. Both stakeholders and Independent Verifier supported removing the measure.
AH: Asset Health	-	Proportion of assets in poor health for selected asset classes	Retain with changes. Key changes include: • expanding number of asset classes and combining them into one measure, weighting sub-classes by criticality; and • removing the quality standard (preferred option) or introducing pooling (across years and subclasses).
CS1: Customer Service 1 – Overall customer satisfaction	-	Average level of overall customer satisfaction based on responses in an annual customer engagement survey.	Introduce new measures. Both stakeholders and Independent Verifier supported introducing the measures.
CS2: Customer Service 2 – New and enhanced grid connections	-	Reports on delivery of new and enhanced grid connections.	

[139] Revenue amounts are in nominal $'s and not referenced to any particular year.
[140] Transpower New Zealand Limited, "*Service Measures Report 2023*", (November 2023), page 39.

The verifier's view of Transpower's proposed RCP4 grid output measures

7.26 The Verifier evaluated the grid output measures against criteria set out in the Verifier terms of reference.[141] The Verifier considered that most of the proposed changes to the existing measures were appropriate, namely the removal of grid performance measure GPM, and asset performance measure AP5, the addition of new grid performance measure GP3, and introduction of new customer service measures customer satisfaction 1 (**CS1**) and CS2.

7.27 However, the Verifier raised some concerns about the proposed changes to grid output measure settings, as this could result in some measures losing their effectiveness.[142]

7.28 For grid performance measures grid performance 1 (**GP1**) and GP2, the Verifier suggested setting defined minimum performance levels, stating that:[143]

> Regarding the use of historical averages of network performance to set targets. There is a risk, if network performance deteriorates over time, that this performance will be 'baked in' when averaging historical performance to set targets. We suggest that when exploring quality standards for future RCPs Transpower explore the merit in setting defined minimum performance levels acceptable to stakeholders. As an alternative to averaging of historical performance, particularly if the historical average shows declining performance.

7.29 For asset performance measure AP1, the Verifier did not support including a threshold limit for major unplanned events. For asset performance measure AP2, the Verifier did not support removing the quality standard. [144]

7.30 The Verifier did not support removing the quality standards for the asset health measure, as asset health can be an effective leading indicator of the future performance of the network.[145]

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[141] Commerce Commission, "*Deed relating to RCP4 independent verification*", Appendix 2 – Terms of reference, Appendix 2, paragraph 18.

[142] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 487.

[143] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 469.

[144] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), page 479.

[145] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.11, page 485.

7.31 However, if we did retain quality standards, the Verifier supported pooling across disclosure years as this would allow for some variance to the delivery plan due to unforeseen changes, reprioritisation or optimisation, and the retention of quality limits relating to the proportion of assets in poor health This is similar to the approach taken to set the RCP3 limits.

Our preliminary view of Transpower's proposed RCP4 grid output measures

7.32 We will be assessing each of Transpower's proposed grid output measures to ensure that the RCP4 settings are an effective combination of incentives to provide services at a quality that customers demand and reflect the increased work programme that Transpower forecasts it needs to carry out.

7.33 For any proposed modification to the RCP3 grid output measures, we must strike a balance that reasonable changes are allowed to reflect Transpower's evolving operational requirements, especially in the pursuit of long-term improvements, with consumer quality expectations.

7.34 However, continuously modifying settings at each reset can render targets meaningless, and any proposed changes should first consider the original intent of the grid output measures.

7.35 While it may be unreasonable to require Transpower to expend resources on measures that do not provide benefit, collecting data to assess the long-term patterns of service quality may provide you with useful information and help us with our future regulatory settings.

7.36 In the following sections of this chapter, we discuss each of Transpower's proposed grid output measures in more detail, and the most significant changes it has proposed for RCP4 that will likely be the focus of our review.

Grid Performance measures GP1 and GP2

7.37 Grid performance measures are measures of performance as experienced by consumers (both demand and generation) at their points of service (**POS**).

7.38 Over RCP3, grid performance measure GP1 sets quality standards and incentives for the number of unplanned outages experienced at each POS, while grid performance measure GP2 sets quality standards and incentives for the average duration of those unplanned outages.

7.39 Transpower splits the GP1 and GP2 points of supply into 5 categories namely, high priority, important, standard, generator, and N-security with different quality standards, targets, caps, collars, and incentive rates for each. The caps and collars set the range of performance for which Transpower is penalised or rewarded.

7.40 In RCP3, we set the grid performance measures GP1 and GP2 quality standards through a 'pooling' approach, to assess contravention of the quality standards based on performance across points of service categories over a rolling time period.

7.41 This approach was taken to increase the effective POS sample size and reduce the risk of quality breaches due to low numbers of POS in some categories, and to filter single-year performance issues in individual categories.

7.42 In its RCP4 proposal, Transpower proposes that grid performance measures GP1 and GP2 be retained but is seeking a change to how the measures are set. While Transpower proposes to retain the rolling average approach introduced in RCP3, it has proposed several changes.

7.43 These changes include:

7.43.1 updating the POS categorisation to be based on forecast load;

7.43.2 using historic averages to forecast unplanned interruptions; and

7.43.3 excluding the effect of any automatic underfrequency load shedding.

7.44 We intend to focus our assessment on the implications of Transpower's proposed changes and whether the intent of the grid performance measures is still being met.

7.45 We will likely seek further information on the implications of Transpower's approach to categorising the points of supply, and the approach it will take for new points of supply.

7.46 Our early view is that Transpower updating categories based on forecast load is a sensible approach, and this was supported by the Verifier.

7.47 We are interested in your views about how grid performance measures GP1 and GP2 have performed over RCP3, the use of the pooled rolling average approach we took in RCP3, and its continued use over RCP4.

7.48 We are also interested in your views about Transpower's proposal to remove the effects of automatic underfrequency load shedding and other events, that did not originate in its network, and the use of normalisation as a means to account for these events.

Grid Performance measure GP3

7.49 Transpower is proposing a new non-revenue-linked, trial grid performance measure, GP3. GP3 will measure energy not served, which is the amount of energy demand that is not supplied due to a transmission interruption to supply.[146]

7.50 Transpower considers that the GP3 measure provides a good indication of the overall performance of the grid.

7.51 The Verifier reviewed Transpower's proposed reporting measure GP3 which at the time of verification was termed network risk measure, NR. The Verifier supported the NR measure as it would provide "a quantifiable measure of the level of energy Transpower is not able to serve due to interruptions within its control."[147]

7.52 The Verifier noted that reporting GP3 against the existing GP1 and GP2 sub-categories is logical and will standardise the reporting approach across the different grid performance measures, and that not proposing targets, incentives or quality standards is reasonable for a new serviced measure.

7.53 In its proposal Transpower states that it does not currently model or predict this performance at an aggregate level, and has not forecast the level of energy not served.

7.54 Our early view is that we support the GP3 measure as this is a measure that reflects transmission network reliability as it affects consumers. We will consider how Transpower plans to develop its asset and network risk modelling over RCP4 so it can forecast this measure in future, based on the transmission asset investments and interventions it plans to carry out.

7.55	We are interested in your views about Transpower's proposed GP3 measure as a reporting only measure, with a view to this being based on Transpower's asset and network risk modelling in future resets.

[146] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 7.2.2, page 81.

[147] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.12, page 488.

Grid Performance measures GPM

7.56 In our RCP3 decision we introduced reporting only grid performance measure GPM, which was the number of unplanned interruptions of less than one minute's duration, or momentary interruptions.

7.57 At the time we reasoned that Transpower was collecting this data and stakeholders suggested that reporting it would be beneficial to customers.[148]

7.58 Transpower is proposing that we remove the reporting only grid performance measure GPM, because customers did not use the GPM reporting, and that specific data could be useful to stakeholders in their annual engagement plans.

7.59 In its RCP4 proposal Transpower plans to provide information relating to momentary interruptions in those plans, and the Verifier agreed that this was reasonable. [149,150]

7.60	We are interested in your views about Transpower's proposal to remove the grid performance measure GPM as a reporting measure, and if Transpower's plan to voluntarily report on momentary interruptions in its customer annual engagement plans, is supported.

Asset Performance measures AP1 and AP2

7.61 Measures of asset performance are measures that quantify the performance, reliability, or availability of an asset, whether at the level of an individual asset, an aggregation of assets (such as a substation), or the grid as a whole.

7.62 Over RCP3, asset performance measure AP1 sets quality standards and incentives for the annual HVDC link energy availability, while asset performance measure AP2 sets quality standards and incentives for annual selected AC network asset availability. Both measures are reflective of the impact HVDC and AC asset availability has on the electricity market.

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[148] Commerce Commission, "*Transpower's individual price-quality path from 1 April 2020 – Decisions and reasons paper*", (29 August 2019), paragraph F55, page 149.

[149] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.5, page 473.

[150] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 7.6.2, page 87.

7.63 In RCP3, we set the quality standards for asset performance measures AP1 and AP2 lower than the collar of the incentive range, using a deadband, to reflect small variations year-to-year from Transpower's average historical performance.[151]

7.64 We did not take the same pooling approach we had taken for grid performance measures GP1 and GP2, instead introducing the deadband below the incentive range which we reasoned would have a similar effect.

Asset Performance measures AP1 – HVDC energy availability

7.65 In its RCP4 proposal, Transpower proposes to retain the AP1 measure, with several changes to how the measure is determined. [152] These changes include:

7.65.1 excluding the impact of associated planned outages from all major capex projects, and listed projects, involving HVDC pole 2 and pole 3;

7.65.2 excluding the impact of planned resilience work to 'harden' HVDC towers against wind and flood damage;

7.65.3 setting targets for the measure based on Transpower's RCP4 workplan using the method set out in its 2023 Service Measures Report;

7.65.4 including a threshold limit to mitigate the impact of major unplanned outages to ensure that no single unplanned event can have a disproportionate impact on the overall performance against the measure in a year; and

7.65.5 introducing annual quality limits that are pooled across several disclosure years for the quality standard, as outlined in Transpower's 2023 Service Measures Report 2023 (like the GP1 and GP2 settings).

7.66 The Verifier noted that there was mixed support from submitters for some aspects of Transpower's draft proposed changes.

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[151] Deadbands and pooling are two settings that allow scope for small variations in the data, avoiding unreasonable penalties for Transpower. Deadbands allow flexibility by introducing a gap between the quality standard and the incentive range collar. This results in deviations from the mean across reporting years. Pooling can be set in a number of ways, for instance across asset classes, sub-categories, and years. When applied across years, as proposed for AP1 and AP2, it results in deviations from the mean across years not being as punitive.

[152] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 7.3.1, page 81.

7.67 Submitters supported excluding the effect of major capex projects and listed projects, provided industry stakeholders are specifically consulted on these projects, but did not support the proposal to mitigate the impact of major unplanned outages by either introducing a threshold limit or by excluding all unplanned outages.[153]

7.68 We intend to focus our assessment on the implications of Transpower's proposed changes on its quality standards and incentives, and whether the intent of the AP1 measure is still being met.

7.69 Excluding the impact of planned outages resulting from major capex projects, listed projects, and new resilience workstreams, may mean that there are lower incentives for Transpower to conclude these works in a timely manner as there are no incentives to limit the duration of outages.

7.70 Additionally, introducing pooling across disclosure years for the quality standards may mean that there is duplication in mitigating tools for atypical years. We note that Transpower is proposing a 1% "deadband" in its proposal, that provides a similar benefit to multi-year pooling.[154]

7.71	We are interested in your views about Transpower's proposed changes to the asset performance measure AP1, particularly the proposed exclusion of outages related to major projects and resilience mitigations as they affect HVDC availability, and how we can incentivise Transpower to optimise outage durations when it carries out this work.

Asset Performance measure AP2 – selected HVAC asset availability

7.72 In its RCP4 proposal, Transpower proposes significant changes to the AP2 measure, that include:[155]

7.72.1 limiting the scope of planned outages on unavailability caused by maintenance, and replacement and refurbishment work;

[153] Transpower New Zealand Limited, *"Service Measures Report 2023"*, (November 2023), pages 44-45.

[154] The deadband introduced in the RCP3 decision refers to the quality setting being below the incentive range collar setting.

[155] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 7.3.2, page 82.

7.72.2 excluding unavailability caused by certain work types such as major capex projects, listed projects, base capex enhancement and development projects, and customer-funded work;

7.72.3 including a threshold limit to mitigate the impact of major unplanned outages, to ensure that no single unplanned event can have a disproportionate impact on the overall performance;

7.72.4 updating the list of AC assets that are subject to AP2, to ensure that these reflect anticipated market constraints during RCP4; and

7.72.5 removal of the AP2 quality standard but retention of the revenue linking between a cap and collar.

7.73 The Verifier recommended that the AP2 quality standard should be retained as there was no sufficient reason for its removal, and did not agree that pooling across disclosure years was supported.[156]

7.74 The Verifier did agree that removal of the effect of outages due to major transmission project work was a reasonable step, and that a 150-hour threshold limit for major individual unplanned outages is appropriate because "this covers a larger population of assets compared to HVDC."[157]

7.75 The Verifier supported the proposed methodology for setting the target using linear regression to forecast unavailability due to planned outages, and forecast expenditure over RCP4, and agreed this is an improved approach to setting the target. In the Verifier's opinion the proposed AP2 incentive rate, targets, caps and collars proposed by Transpower are appropriate.

7.76 In our review of Transpower's grid output measures we will likely focus the majority of our attention on the AP2 grid output measure. The quality standard associated with this measure has proven difficult for Transpower to meet over RCP3, mainly due to major project work that was unforeseen at the time the RCP3 decision was made in 2019.

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[156] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.7, page 478.

[157] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.7, page 480.

7.77 One option is to remove the effect of major project works, and modify the settings when Transpower applies for a listed project and major capex project. There are downsides to this approach. Once a project is approved and goes ahead, there would be lower incentives for Transpower to conclude works in a timely manner, as there are no incentives to limit the duration of outages.

7.78 Keeping the quality standard may mean that Transpower's focus is maintained on the asset performance, enabling us to investigate breaches of targets. The existence of quality standards implies a requirement on Transpower to actively work on improving or maintaining performance and asset availability.

7.79 Pooling may mean that there is a duplication in mitigating tools for atypical years as explained in paragraph 7.64 for the AP1 measure.

7.80	We are interested in your views about Transpower's proposed changes to the asset performance measure AP2, particularly the proposed removal of the quality standard, the multi-year pooling approach, and the introduction of a threshold limit for major unplanned outage durations.

Asset Performance measure AP5 – N-security reporting

7.81 The AP5 asset performance measure, N-security reporting, was introduced in RCP2 as a reporting only measure, and continued over RCP3. This measure requires Transpower to report on situations that have a potential for significant impact on customers if they are placed on N-security without adequate warning to prepare.

7.82 Transpower propose that the AP5 measure is discontinued over RCP4, as it does not consider it provides a leading indicator of grid deterioration or assists in mitigating outage risks.

7.83 Transpower's view is that the outage notification protocols it has in place ensure customers receive sufficient warning when their security is reduced to N-security, and allows them to assess and understand the level of risk. Transpower consider N-security reporting is time-consuming to compile, is not valuable to its customers, and notes that all submitters involved in the RCP4 proposal engagement process supported its discontinuation.[158]

[158] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.10, page 484.

7.84 The Verifier noted that, while it agreed that "timely and accurate information about the level of supply security to customers during outages is essential to enable customers to make effective decisions about how they manage the risk of loss of supply", historic information about N-security "may not necessarily assist customers with risk management of current or future outages."[159]

7.85 The Verifier concluded that, based on the fact that Transpower has an outage notification protocol to ensure customers receive sufficient warning when their security is reduced to N-security, and also provides an annual outage plan to customers, it supported the discontinuation of the AP5 reporting measure.

7.86 We will consider whether the discontinuation of the AP5 reporting measure is reasonable in our review of the RCP4 proposal and are seeking your views about whether AP5 has been useful to you.

Asset Health measures - AH

7.87 In our RCP3 decision, we introduced asset health measures alongside improvement initiatives for Transpower to further develop asset health and risk modelling, with a view to expanding the asset health and risk quality measures. We see asset health and risk as a true leading indicator of grid and asset performance that is linked to investment decision, and maintenance interventions.

7.88 In RCP3 we did not link Transpower's proposed asset health measures to revenue, instead setting these as a trial for future revenue-linking, and applied quality standards that required Transpower to:[160]

7.88.1 provide information on the asset health measures as if these were revenue-linked;

7.88.2 provide a limited scope mid-RCP3 expert opinion on Transpower's progress in developing its asset and network risk modelling; and

7.88.3 specify minimum asset health quality standards in the power transformer, and outdoor circuit breaker asset classes, set between the proposed trial asset health measures' collar values, and what this would be without intervention for each year of RCP3.

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[159] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.10, page 484.

[160] Commerce Commission, "*Transpower's individual price-quality path from 1 April 2020 – Decisions and Reasons paper (29 August 2019)*", Attachment F, p.123.

7.89 We set the minimum asset health quality standards based on Transpower's asset health indicators, in asset classes where Transpower had the most developed and mature asset health and risk modelling.

7.90 We also set Transpower some asset health and risk modelling improvement initiatives over RCP3, so that RCP4 asset replacement or refurbishment expenditure decisions would be better informed.

7.91 In our RCP3 decision we considered that better asset health models lead to more confidence that Transpower's expenditure forecasts can be relied on, and reduce the risk to customers that Transpower is over-forecasting expenditure, and to Transpower that it is under-forecasting expenditure.

7.92 Our RCP3 asset health settings were set as a trial with a view to expanding the measures to a wider range of asset classes, revenue linking them and introducing quality standards.

7.93 In previous resets, Transpower's grid output measures have largely been based on historical asset availability and grid performance, which is not consistent with a situation where asset age profiles are not uniform.

7.94 Asset health focussed quality measures act as a forward-looking view of the state of network assets, as opposed to asset outage measures, which are a lagging indicator of asset investment and investment intervention decisions made in previous years.

7.95 Given Transpower has signalled in its RCP4 proposal that it is facing the situation where it needs to replace or renew a higher quantity of assets that are reaching the end of their expected life, historical performance may not reflect future performance. Additionally, using asset health and risk measures will indicate if Transpower is over or under investing to maintain existing levels of service performance and asset availability.

7.96 Over RCP3, Transpower has been maturing its asset health and risk modelling, and we discuss these developments in Chapter 4. Our early view is that the asset health measures can be extended further than what we set in RCP3, due to these developments.

7.97 Transpower, in its RCP4 proposal, has proposed that up to seven asset classes are now in a sufficiently mature asset health and risk modelling state for it to consider these to be included as additional reporting measures.

7.98 While Transpower is proposing that the quality measures should be removed, these asset health and risk model outputs are driving much of the proposed capital expenditure over RCP4, which it is confident it needs.

7.99 Our early view is that the number of asset classes that are subject to the asset health quality standards should be extended, based on the maturity of the modelling that has been reviewed by both the expert opinion during RCP3, but also the RCP4 Verifier. We will be guided by these reviews if we decide to extend the asset health measures.

7.100 Transpower also proposed a pooling approach be taken. While the Verifier supported pooling, because it smoothed out delivery plan variances, Transpower has indicated that it is confident it can recruit the staff it needs to carry out its work programme, and also to deliver on that plan.

7.101 Transpower's proposal that it combines asset classes, subject to an asset health measure, into one overall asset health measure, may mean that the approach will be similar to the asset performance measures, and allow for tracking of different classes, while simplifying compliance.

7.102 We will explore Transpower's proposal that it weights asset health measures based on the criticality of those assets in our review. Our early view is that this may introduce a complexity in the process with targets that are not comparable over time.[161]

7.103	We seek your views about Transpower's proposed asset health measures. We are particularly interested in your views about whether extending the asset health quality measures, and revenue linking these, is supported.

7.104 We consider that asset health-based quality measures complement the existing asset availability and grid performance measures and provide a leading indicator of future performance. Asset health quality measures would also reflect Transpower's asset investment and intervention decision making.

[161] Transpower is proposing to have four asset classes (conductors, insulators, outdoor circuit breakers, and power transformers) that are weighted by criticality. This means, for instance, that if a conductor is deemed low in terms of criticality, its health score will have a lower impact on the target than a conductor which is deemed high. If the criticality of the conductors changes over time, the asset health score will change even if the asset health of each conductor has not actually changed. This may make difficult to compare asset class values across time.

Customer service measures CS1 and CS2

7.105 Transpower is proposing two new reporting only measures that are customer focussed, namely:[162]

7.105.1 CS1 which is a measure of overall customer satisfaction, based on a question in Transpower's annual customer survey (average percentage); and

7.105.2 CS2 which focusses on how Transpower is delivering new or enhanced grid connections across five sub-categories, representing different elements of the connection process.

7.106 The Verifier concluded that the inclusion of the CS1 "would be beneficial as it provides a measure of customer satisfaction that can be benchmarked by year and across different customers to determine trends in customer satisfaction. Further, it provides an additional opportunity for Transpower to engage with customers and address issues that may impact on customer satisfaction."[163]

7.107 The Verifier considered that introducing CS1 without targets, financial incentives or quality standards is reasonable for a new grid output measure, stating that while "customer satisfaction is not a traditional measure of network performance it is our opinion that it is an important indicator on whether Transpower are well performing as an organisation."[164]

7.108 The Verifier supported the inclusion of CS2 as it "provides a measure of the effectiveness of Transpower's customer connection process in terms of responsiveness, time to deliver connections and whether customer expectations have been met)."

7.109 The Verifier noted its experience with Australian Transmission Network Service Providers (**TNSPs**) and customer connections, stating that:

> From our experience, engaging with Australian TNSPs and their connection customers, the connection process is often seen as opaque, expensive, overly lengthy, and subject to project delays. Measures to streamline the process, such as

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[162] Commerce Commission, *"Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path",* (9 October 2023), section 7.5, page 85.

[163] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.13, page 489.

[164] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 20.13, page 490.

formal queueing processes as well as the proposed CS2 measure have the potential to simplify the connection process and provide greater connection certainty.

7.110 The Verifier noted that, in its experience, transmission connection processes are an area that connection customers expect higher levels of performance than they often receive.

7.111 Our early view is that we support the introduction of customer service measures CS1 and CS2 as reporting only measures, and we seek your feedback on these.

Other measures we might consider in our RCP4 decision

HVDC operational availability AP1.2

7.112 As discussed above, the asset performance measure AP1 measures HVDC availability without considering related assets that are necessary for the HVDC link to operate.

7.113 One option we are considering is the introduction of a parallel measure, with no quality standard and no revenue linking, that includes all HVDC related assets to measure the actual HVDC operational capability.

7.114 We are interested in your views about whether this reporting measure would be of use to you.

Market impact measure AP2.2

7.115 The present asset performance measure AP2 is an electricity market-based measure. However, it does not directly measure the cost impact of transmission line outages on wholesale electricity market costs.

7.116 There are electricity market cost impact measures in other jurisdictions that provide a more direct link between transmission asset, transmission line outages, and electricity market costs.

7.117 For example, the Australian Energy Regulator (**AER**) has implemented an electricity market impact cost measure, which considers transmission asset outages that increase the wholesale electricity market price by more than $10/MWh.[165]

[165] Australian Energy Regulator, "*AER – Electricity TNSP Operational performance data 2006–22*", (7 July 2023).

7.118	If we introduced such a measure this could make the present asset performance measures more useful for consumers. We envisage a measure which analyses the impact of the absence of transmission on electricity prices. We are exploring whether there is support for the introduction of AP2.2 as a reporting only measure at this stage, and we seek your views about this.

Chapter 8 Deliverability

Purpose of this chapter

8.1 The purpose of this chapter is to seek your views on how Transpower has addressed deliverability risks for RCP4 expenditure and outputs.

8.2 In setting expenditure allowances for RCP4, we are required to apply the base capex evaluation criteria specified in the Capex IM, one of which relates to the overall deliverability of the proposed base capex during the regulatory period.[166] [167]

8.3 We also consider it important that Transpower's customers, when consulted on potential deliverability adjustments to proposed capex and opex, understand the impact on network risk when identified works are deferred.

8.4 In this chapter we discuss:

8.4.1 deliverability risk faced by the New Zealand electricity sector in the medium term;

8.4.2 the deliverability constraints Transpower has identified in its RCP4 proposal;

8.4.3 the Verifier's view on RCP4 deliverability; and

8.4.4 our preliminary view about how Transpower intends to resolve potential deliverability issues.

8.5 We also pose specific questions where we seek your views on deliverability risk as it applies to the RCP4 proposal.

Background

8.6 Deliverability risk is likely to be an electricity sector-wide issue given the increasing importance of decarbonisation and demand electrification, and this will affect both Transpower and EDBs.

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[166] *Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination* 2023 [2023] NZCC 2023, (13 December 2023), Schedule A, clause A1(h).

[167] In assessing opex, we are also guided by the base capex evaluation criteria where they can be usefully applied to opex.

8.7 In our recently published EDB DPP4 reset Issues Paper, we expressed concern about the scale of EDB work programmes, given the "labour market conditions and wider supply chain challenges, which is expected to continue in the medium term." [168] These issues will also affect Transpower.

8.8 The electricity sector will also be competing for workforce resource with the wider New Zealand infrastructure sector, which is predicted to require nearly 350,000 extra staff just to meet the near-term project, and programmatic infrastructure upgrade need.[169]

8.9 We noted in the EDB DPP4 Issues Paper that, from a regulatory perspective, deliverability concerns represent a risk that projects are planned but are not delivered, resulting in elevated profits for regulated parties, not through improved efficiency, but through non-delivery.

8.10 Under-delivery may also result in elevated levels of asset and network risk. Assets that are not refurbished or renewed in a timely manner can result in a defect backlog, which over time will increase asset outage risk.

Transpower has identified delivery risk in its RCP4 proposal

8.11 In its RCP4 proposal Transpower is forecasting a significant increase in its work programme over RCP4, noting that:[170]

> To complete the RCP4 work programme, we will require significant growth of our own workforce as well as active support to encourage the growth of engineering consultants, service providers, and specialist contractors from offshore. We also need resilient supply chains and inventory to ensure we have the required material and equipment as we need them.

8.12 To address delivery risk Transpower has set up a number of initiatives and processes to:

8.12.1 meet the number of full-time equivalents (**FTEs**) that both Transpower and its service providers would need to recruit; and

8.12.2 improve supply chain management to minimise asset deliverability risk.

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[168] Commerce Commission, "*Default price-quality paths for electricity distribution businesses from 1 April 2025 Issues paper*", (2 November 2023), page 30.

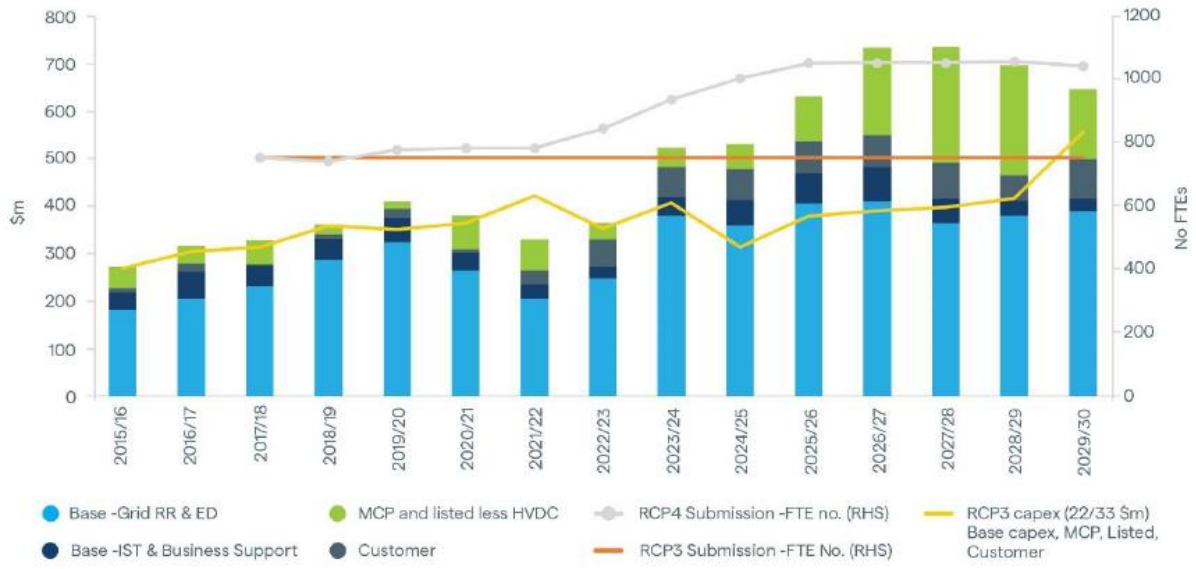
[169] Commerce Commission, "*Default price-quality paths for electricity distribution businesses from 1 April 2025 Issues paper*", (2 November 2023), paragraph 3.30.

[170] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 6, page 61.

How Transpower intends to address FTE uplift need

8.13 In its RCP4 proposal, Transpower has projected the FTE workforce growth, both internal and external, required to meet its current work programme under RCP3, and what is proposed in RCP4.[171]

Figure 8.1 Forecast FTE growth and expenditure to 2030 (excludes FTE attrition and opex)[172]



8.14 Figure 8.1 illustrates that Transpower has been increasing its FTE numbers since 2021/22 in RCP3 (grey line) above those that it predicted it needed in its RCP3 proposal (orange line).[173] Mainly this is because it has been spending (and intends to spend) above its RCP3 allowance in order to continue to deliver its forecast work programme, and build capability for RCP4 and beyond.[174]

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[171] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 6.1.1, page 63.

[172] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 6.1.1, Figure 18, page 63.

[173] For example, year 4 of RCP3 refers to the period 1 April 2023 to 31 March 2024 which Transpower denotes as 2023/24 in its proposal.

[174] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 4.1, page 29.

8.15 In its RCP4 proposal, Transpower discusses the workforce planning initiatives it has implemented, and plans to implement, to support the remaining RCP3 and forecast RCP4 programme delivery. These include both internal and external initiatives such as increasing promotional activity, international recruitment, closer engagement with service providers and consultants, and investing in a grid skills training centre to train a larger volume of service provider workers.[175]

8.16 In addition to the 200 proposed additional internal FTEs Transpower says it needs to recruit, Table 8.1, reproduced from Transpower's RCP4 proposal, summarises Transpower's latest view of external service provider FTE growth estimates required to meet its work programme out to 2030.[176]

Table 8.1 Resource growth for service providers forecast to 2030 (excludes attrition)

Category	Total growth (percent)	Total growth (number of people)	Months to 'ready to work'
Line mechanics	70 to 85 percent	~145 to 185	18
Power technicians	40 to 45 percent	~30 to 35	42
Substation maintainers	40 to 45 percent	~75 to 85	18
Tower painters	45 percent	~80	18
Maintenance switchers	To grow in line with other trades		18

8.17 By September 2023, Transpower had recruited 38 of its target 92 new FTEs for the 2023/2024 period, which covers 1 July 2023 to 30 June 2024. Transpower states that over this period it needs to recruit approximately 190 FTEs in total, for the forecast 92 FTE uplift, and to cover for what it states is an historical staff attrition rate of 11%.

How Transpower intends to address potential asset procurement issues

8.18 Transpower says in its proposal that there is "a continuing challenge of international competition for materials and equipment required to decarbonise."[177] Deliverability issues related to asset procurement lead times and supply chain delays are also now a consideration.

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[175] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 6.1.1, Figure 18, page 63.

[176] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 6.1.1, Figure 138, page 52.

[177] Transpower New Zealand Limited, *"Regulatory control period 4 proposal April 2025 – March 2030"*, (21 November 2023), section 6.3, page 70.

8.19 Transpower is mitigating this aspect of deliverability risk in a number of ways. Primarily, it is increasing pre-purchase of equipment, warehousing capacity, and inventory holdings to buffer the supply chain timing and volume uncertainties.

8.20 Transpower has focussed on its supply chain management processes, and identified areas where it will improve this aspect of RCP4 programme delivery, such as developing specialist procurement expertise, inventory management, and warehousing logistics.[178]

The Verifier's view of RCP4 deliverability

8.21 The Verifier carried out a comprehensive review of Transpower's ability to deliver the RCP4 work programme.[179]

8.22 In its review of the proposal material the Verifier considered a number of criteria to evaluate Transpower's ability to deliver the RCP4 programme, namely:

8.22.1 historical delivery performance and internal workforce capability;

8.22.2 ability to contract the necessary services;

8.22.3 procurement of necessary materials and equipment; and

8.22.4 programme delivery capability.

Historical delivery performance and internal workforce capability

8.23 In terms of historical delivery performance, the Verifier commented that historical data indicated Transpower has been able to expand its organisational capability to deliver step changes in total expenditure, equivalent to what it is proposing over RCP4.

8.24 This was demonstrated over the 2010-2013 period when Transpower delivered a number of major projects, such as the 400kV line between Whakamaru and Pakuranga, and the HVDC Pole 3 upgrade, as well as its ongoing asset renewals programme.

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[178] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), section 6.3, pages 69-70.

[179] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 7, pages 77-98.

8.25 A key Verifier concern about Transpower's RCP4 proposal was whether it could recruit and sufficiently develop approximately 200 additional FTEs (often in highly specialised areas) to deliver the forecast work programme, especially given there will be significant competition for this resource both domestically, and overseas.

8.26 This is not a situation Transpower faced over the 2010-2013 period to the extent that it will likely face over RCP4 with major upgrades also being required. New Zealand EDBs are forecasting that they will also need a significant asset investment uplift, and the global trend to decarbonise through electrification will also affect overseas transmission asset owner work programmes.

8.27 Of note is the Verifier's analysis of Transpower staff turnover.[180] While Transpower states in its proposal that its historical staff attrition rate is about 11%, recent attrition trends since 2019/2020 are much higher than 11%. Total Transpower staff attrition has seen rates increasing from an average of 8.1% between 2017/2018 and 2019/2020, to attrition rates of 12.4% in 2020/2021 and 15.5% in 2021/2022.

8.28 The Verifier also carried out a more focussed staff attrition rate analysis at a division level. While the grid development staff turnover rate has been relatively stable since 2019, at about 9%, works delivery staff turnover rates have increased from 9.3% to 14.4% over the same period.

8.29 While the Verifier noted Transpower's planned initiatives to recruit the additional FTEs it states it needs, there is no discussion on whether Transpower is investigating the reason for increasing staff attrition rates in key technical areas, and whether these rates can be decreased.

8.30 We note also that the Verifier did not seek scenario analysis from Transpower about the impact of not meeting its FTE targets, and how not meeting targets will affect network investment, and the opex to support this investment.

8.31 In summary, rather than propose that we apply a deliverability adjustment, to account for any inability to recruit and even maintain the necessary FTEs, the Verifier suggested that we require Transpower to provide regular reporting on the status of its specialist workforce development over RCP4.

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[180] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 7.4.2, page 86.

Ability to contract the necessary services

8.32 The Verifier reviewed the processes Transpower has implemented to manage its external service provider resource.

8.33 Over RCP3, Transpower has been updating and streamlining its grid services contracts into six regional services areas. This is to provide a greater level of certainty to service providers in terms of expected future work volumes, and to ensure that these are volumes are more consistent, and coordinated.

8.34 Previously, Transpower had 22 separate service provider contracts across individual regions, and in some cases, work volumes did not make these contracts commercially viable. By consolidating contracts over larger catchments, Transpower will be better able to guarantee consistent work volumes, and allow service providers the ability to develop and retain specialist skilled staff.

8.35 The Verifier concluded that Transpower's updated service provider processes will provide a "greater level of certainty regarding contractor work levels and forward work levels" and enable service providers to "grow their teams in line with the expected future work volumes."[181]

Procurement of necessary materials and equipment

8.36 The Verifier reviewed the range of measures Transpower has introduced to address supply chain risk, and manage procurement across its business units, noting that:[182]

> Transpower currently spends approximately $500m per annum on the procurement of goods and services across the company. Approximately 85% is involved with grid services, Information and Communications Technology (ICT) services, or materials in support of the grid with the remaining 15% spent on other enabling services.

8.37 Transpower has developed a "detailed procurement method that, while addressing compliance with principles, policies and procedures, is also designed to match the value, risk, criticality, and complexity of the purchase."

8.38 The Verifier concluded that the new procurement and supply chain processes Transpower had implemented, will improve visibility of plans and procurement need.

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[181] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 7.9, pages 97-98.

[182] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 7.6, page 90.

Programme delivery capability

8.39 The Verifier reviewed Transpower's RCP4 programme delivery capability, and the planning and management of transmission asset outages, to manage that delivery.

8.40 Transpower's outage planning process sets out how it plans outages to deliver works delivery, including maintenance and project works. The process provides a framework for Transpower and service providers to schedule and resource the work plan, and minimise asset unavailability.

8.41 The Verifier concluded that Transpower's planning and management of transmission asset outages to manage works delivery, is systematic and "consistent with the outage planning approach of other TNSPs."[183]

8.42 Transpower's programme delivery framework sets out the key roles and responsibilities, and provides an overview of programme planning and delivery functions.

8.43 The programme delivery framework was developed to enable Transpower and its service providers to group work at a site where this is appropriate and efficient, ensure procurement principles are considered, maintain workforce capacity and levelise the work programme, and consider customer issues and constraints.

8.44 The Verifier concluded that Transpower's work programme delivery framework has been modified following an external review in 2019, and that recommendations from that review were implemented, such as new management and governance systems, and delivery team restructuring.

Our preliminary view of RCP4 deliverability

8.45 Transpower's forecast uplift in asset related expenditure over RCP4 has largely been driven by improved asset management processes identifying assets that require replacement or refurbishment, in order that the present levels of quality are maintained.

8.46 Under-delivery of this work programme may increase defect backlogs. The challenge in this reset is to provide sufficient funding to Transpower to enable it to manage its asset related risk, while balancing the risk that it cannot deliver.

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[183] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 7.7.1, page 95.

8.47 In its RCP3 proposal, Transpower identified a number of deliverability risks associated with its forecast uplift in expenditure (i.e., a 7% increase in base capex and 2.9% increase in opex) when compared with RCP2. At that time, Transpower stated the deliverability risk would likely be due to "resourcing, as resource constraints can impact on work volumes and the timing of works."[184]

8.48 After an internal top-down deliverability review, and following consultation feedback, Transpower applied downwards deliverability adjustments of 5% for base capex, and 2% for opex, to its RCP3 expenditure forecasts.[185]

8.49 While Transpower was sufficiently concerned about its ability to deliver what was a relatively modest uplift in RCP3 expenditure, it does not appear to have the same concern with what is a significantly larger expenditure uplift in its RCP4 proposal. For example, there is no evidence in its RCP4 proposal that it has carried out an internal top-down deliverability review.

8.50 We have also seen no evidence that Transpower has carried out FTE uplift scenario analysis to test the extent of work programme delivery, and the impact this has on its RCP4 expenditure forecasts for a range of FTE increases.

8.51 We have reviewed the Verifier's report and the Transpower proposal material. While the Verifier identified RCP4 delivery risk as a key issue, particularly Transpower's ability to attract and retain the internal FTE's it requires, it did not suggest that any deliverability adjustment be applied, concluding only that we implement a delivery reporting mechanism.

8.52 Transpower states in its proposal that its FTE attrition rate is 11%, but the Verifier report indicates the attrition rate has been significantly higher in recent times, and in divisions that are specifically related to delivery and management of asset works.[186]

8.53 While we consider that Transpower has an appropriate delivery governance, management, recruitment, and asset procurement processes in place to deliver the required programmes, we are concerned that:

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[184] Transpower New Zealand Limited, "*Transpower's individual price-quality path for the next regulatory control period Issues paper*", (7 February 2019), paragraph 9.5, page 121.

[185] Transpower New Zealand Limited, "*Securing our Energy Future 2020-2025 Regulatory Control Period 3 – RCP3 Proposal*", (November 2018), section 2.3.4, pages 25-26.

[186] GHD Advisory and Castalia, *"Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd",* (12 September 2023), section 7.4.2, page 86.

8.53.1 it will be unable to recruit and retain approximately 200 additional net FTEs to implement the RCP4 programme, given its recent staff attrition rates; and

8.53.2 service providers will be unable to recruit sufficient field technical staff to carry out the RCP4 programme work packages.

8.54 The Verifier noted in its report that Transpower will face "significant competition for skilled and experienced electricity transmission industry resources from external companies and jurisdictions that offer greater renumeration." [187]

8.55 From a regulatory perspective, deliverability concerns represent a risk that projects are planned but are not delivered, resulting in elevated profits for regulated parties, not through improved efficiency, but non-delivery.

8.56 We are considering a number of strategies to ensure Transpower addresses this deliverability risk to consumers and to minimise the possibility that under-delivery is not seen as an efficiency, such as a top-down adjustment, a deliverability wash-up and some form of delivery reporting by Transpower.

We seek your views on the deliverability issues in RCP4

8.57 We welcome your views on the deliverability issues we have outlined here and other views you may have. Some questions we would like you to consider in preparing your submission are:

8.57.1 if you consider that Transpower may not be able to deliver its proposed RCP4 expenditure programme, what mitigation measures do you suggest we should implement;

8.57.2 if you consider that Transpower's proposed RCP4 expenditure programme should be modified to address deliverability concerns, what deliverability adjustment would be reasonable to apply; and

8.57.3 do you support Transpower being required to provide annual delivery reporting so that its progress against its RCP4 expenditure plan can be tracked and differences between forecast expenditure plans and actual expenditure can be explained.

[187] GHD Advisory and Castalia, *"Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd",* (12 September 2023), page vi.

Chapter 9 Possible new information disclosure requirements

Purpose of this chapter

9.1 The purpose of this chapter is to:

9.1.1 summarise our preliminary views on how we consider Transpower has performed against the information disclosure requirements we set under section 53ZD of the Act for RCP3;

9.1.2 seek your views on the effectiveness of those RCP3 requirements;

9.1.3 set out our preliminary views on areas where we might set additional information disclosure requirements for RCP4; and

9.1.4 seek your views on the areas where Transpower needs to improve its performance and where additional ID requirements could be used to inform stakeholders about whether the purpose of Part 4 is being met.

9.2 This will help us decide whether we require additional information to be disclosed by Transpower on areas where we think it could improve.

Background

9.3 In our RCP3 IPP final decision in August 2019, we made decisions on a number of information disclosure requirements in order to monitor progress in Transpower's performance. These included:[188]

9.3.1 enhanced information on service performance and asset availability measures to enable understanding of why quality standards are not met;

9.3.2 enhanced information features for EV account and price path wash-up calculations;

9.3.3 a requirement to publish updated forecast MAR and forecast SMAR values if Transpower proposes we apply a reopener provision in the Transpower IM determination;[189]

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[188] Commerce Commission, "*Transpower's individual price-quality path from 1 April 2020 – Decisions and reasons paper*", (29 August 2019).

[189] Commerce Commission, "*Notice to supply forecast MAR and forecast SMAR calculations to the Commerce Commission under section 53ZD(a)(d), I and (f) of the Commerce Act 1986*", (3 October 2019).

9.3.4 providing information on asset health and risk model development;[190]

9.3.5 providing information on cost estimation improvement;[191] and

9.3.6 providing information on customer consultation improvement.[192]

9.4 We implemented many of these additional information requirements in response to the RCP3 Verifier's report on Transpower's RCP3 proposal, particularly the need for Transpower to continue to develop its asset health and risk modelling, in order that expenditure forecasts could be based on analysis, and mature asset health considerations.

9.5 We discuss below those areas where we consider Transpower may need to carry out further development work.

Cost estimation

9.6 As part of our RCP3 decision we wanted Transpower to provide cost estimation information to enable us to assess how its cost estimation processes were performing, inform our review of Transpower's RCP4 proposal, and assist us in setting major project allowances.

9.7 Mature cost estimation processes mean that we can be much more certain that Transpower's capex programme and proposals are more likely to be efficient.

9.8 There are two risks with inadequate or inaccurate cost estimation processes. The first is that project and programme costs are over-estimated at the proposal stage, and delivered for significantly less than the estimate. This then results in an efficiency reward for Transpower in the form of an incentive payment.

9.9 The second risk is that project and programme costs are under-estimated, and that allowances are insufficient to meet the need. Transpower may then under-deliver on its project and programme work to spend up to its allowance. The risk then is that asset replacement or refurbishment work is deferred, increasing outage risk, and creating a backlog of interventions.

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[190] Commerce Commission, "*Notice to supply information to the Commerce Commission under section 53ZD(1)(d)(i), (e)(i), and (f) of the Commerce Act 19–6 - Requirements for asset health and risk modelling information*", (11 December 2019).

[191] Commerce Commission, "*Notice to supply information to the Commerce Commission under section 53ZD(1)(d)(i), (e)(i), aI(e)(ii) of the Commerce Act 1986 - Cost estimation information*", (11 December 2019).

[192] Commerce Commission, "*Notice to supply information to the Commerce Commission under section 53ZD(1)(dI), (e)(i) and (f) of the Commerce Act 1986 — Customer consultation information*", (14 November 2019).

9.10 The Verifier's report on Transpower's RCP4 proposal concluded that it sighted evidence that Transpower had "a reasonable cost estimation framework designed to produce reasonable cost estimates for both volumetric expenditures and bespoke expenditures".[193]

9.11 The Verifier also compared the unit rates of common asset building blocks with similarly described asset building blocks adopted by Australian distribution network service providers (**DNSP**), and transmission network service providers (**TNSP**), and observed a "reasonable alignment".

9.12 Following its review, the Verifier concluded that, while Transpower is forecasting to replace lower quantities of substation primary assets, and is experiencing higher costs over RCP3, it was able to "explain the difference as being due to price escalation and a change in site specific scope".[194]

9.13 The Verifier also considered Transpower's re-prioritisation of expenditure reflected the reality that investment plan changes can occur over time for a variety of reasons. These include that assets may be in better or worse condition, there may be a change in investment strategy, costs may increase due to scope change and price escalation, and changes in schedule due to asset intervention deferrals or accelerations.

9.14 These are reasonable explanations for what appear to be quite significant divergences between RCP3 cost estimates, and actual incurred costs for certain asset classes. Figure 4-1 in the Verifier's report suggests that, at the time of publication of Transpower's proposal in October 2022, which was halfway through RCP3, Transpower was significantly under-delivering asset renewals in terms of quantity, and at a much higher cost (>30%) in many asset classes.[195]

9.15 We consider that Transpower's project and programmatic cost estimation, versus what it actually spends, is an area we may seek enhanced regular information on during RCP4 as an ongoing improvement initiative. This could be part of a wider delivery reporting mechanism that we will discuss later in this chapter.

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[193] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 4.2.2, page 47.

[194] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 4.2.2, page 46.

[195] GHD Advisory and Castalia, "*Independent Verification Report – RCP4 base expenditure and service measures 2025-30 proposal Expenditure Proposal Transpower New Zealand Ltd*", (12 September 2023), section 4.2.2, page 45.

Asset health and risk

9.16 Transpower has been progressing asset health modelling and risk understanding since the RCP3 Verifier identified it as a key area of development for Transpower.

9.17 Improved asset health models can be used to analytically underpin expenditure forecasts, and risk understanding allows that asset replacement, versus renewal decisions, can be made on a timely risk/cost trade-off basis.

9.18 As part of our RCP3 decision, we set a number of asset health and risk modelling information disclosure requirements. One of these was that Transpower provide an expert opinion to report on the development of asset health and models, asset life-extension models, and risk-based decision-making frameworks.

9.19 The expert opinion (by GHD) found that Transpower's asset management was in a "mature state which is well developed" and that it was progressing well against its asset management goals. GHD considered that Transpower "has progressed well and have met most of the targeted maturity positions" in its roadmap.

9.20 It also identified another five asset categories where asset health modelling improvement opportunities were available, and six asset categories where there were asset risk improvement opportunities available.[196]

9.21 We are also interested in whether Transpower should be required to disclose more detailed asset health modelling information in each asset class to support its expenditure proposals.

9.22 While we have had these reviewed by the Verifier, we intend to carry out our own review. We will consider whether Transpower should publish summary information of the analysis it has undertaken to inform asset investment decision making in a base capex proposal.

We are considering setting additional information requirements over RCP4

9.23 We signalled in our RCP4 Process, framework, and approach paper that we intended to consider further information disclosure and compliance enhancements over RCP4, following our review of the Verifier's report and Transpower's proposal.[197]

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[196] GHD Advisory, "*GHD Expert Opinion Progress– Review - Report on Asset Health and Risk Modelling*", (21 Oct 2023), pages 1-3.

[197] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023), chapter 4, page 16.

9.24 These additional information requirements would be used to help further disclose Transpower's asset management developments, and ensure that expenditure forecast in future resets will be more reliably underpinned by analytical modelling.

9.25 We are considering whether to set project delivery information requirements on Transpower, given the deliverability concerns expressed by the Verifier, and to demonstrate to consumers that Transpower is delivering its planned work.[198] The project delivery information may include:

9.25.1 mid-period information on how Transpower is maturing its asset health and risk model development for asset classes identified in the RCP4 Verifier report where maturity level is below 3;[199]

9.25.2 mid-period information on how Transpower is maturing its asset health and risk model development for asset classes identified in the expert opinion (e.g., the five asset categories where asset health modelling improvement opportunities were available, and six asset categories where there were asset risk improvement opportunities available); and

9.25.3 annual information on cost estimation tracking of forecast expenditures, versus actual expenditure, for assets in key asset programmes, such as AC substations and transmission lines, HVDC and reactive assets, and selected secondary asset classes.

We seek your views on additional information requirements over RCP4

9.26 We welcome your views on the additional information requirements we may set for RCP4, and other views you may have. Some questions we would like you to consider in preparing your submission are:

9.26.1 would you consider annual delivery reporting of Transpower's works programme against what it planned to deliver to be a useful disclosure; and

[198] This is consistent with our ability to set information disclosure requirements on Transpower to ensure that sufficient information is readily available to assess whether the purpose of Part 4 is being met.

[199] In its expert opinion of Transpower's RCP3 progress, GHD defines asset health modelling Maturity Level 3 (**ML3**) as "Asset Health is projected using consistent frameworks and factors across asset classes", and for asset risk ML3 is defined as "consequence quantified using a structured/repeatable framework with weighted economic impact for service and all internal business consequence."

9.26.2	whether Transpower should be required to provide more explicit asset health and risk model summaries, that include asset health and risk model inputs, and expenditure forecast outputs, that demonstrate how it has arrived at investment decisions.

Chapter 10 Revenue path

Purpose of this chapter

10.1 This chapter focusses on Transpower's proposed revenue path for RCP4. We discuss the potential effects of smoothing Transpower's revenues across each year of RCP4, as well as the options for the step change in revenue from the end of RCP3 to the beginning of RCP4, and the impact of indexing Transpower's RAB to inflation.

10.2 In this chapter we discuss:

10.2.1 why the revenue path design is important;

10.2.2 how Transpower has proposed revenue path smoothing;

10.2.3 Transpower's proposed forecast revenues and different scenarios for revenue path smoothing;

10.2.4 issues related to the implementation of RAB indexation; and

10.2.5 setting the length of the regulatory control period.

10.3 We seek your views on options for revenue path smoothing and the step change in revenue between RCP3 and RCP4.

Why revenue path design is important

10.4 The design of Transpower's revenue path determines the timing of how it will recover its allowable transmission revenue over RCP4, which will in turn affect prices paid by Transpower's customers and end users of electricity.

10.5 The shape and design of the revenue path will determine the level of any year-to-year variability of Transpower's transmission revenues.

10.6 In RCP3, we decided to amend the IMs to smooth Transpower's price path in each regulatory period in order to minimise the volatility in revenue across a regulatory period. Transpower has proposed a smoothed price path for RCP4 which is similar to RCP3.

10.7 Revenue smoothing is not intended to change the economic value to Transpower of the total revenue it may recover, only the timing of that revenue recovery. In implementing revenue smoothing, we will consider a number of factors, including:

10.7.1 minimising price shock risks to consumers; and

10.7.2 not imposing undue financial hardship on Transpower.

Transpower's proposed revenue smoothing in RCP4

10.8 In its proposal, Transpower forecast nominal revenue of $6,474 million over RCP4, which is an increase of 59% when compared with RCP3 revenue. This forecast revenue was based on the applicable IMs at the time of submission and did not include the effect of our recent 2023 IM Review decisions on RAB indexation and the 65th percentile estimate of WACC. [200]

10.9 Transpower also provided a revenue forecast that included the effect of RAB indexation and a 65th percentile estimate of WACC. The impact of these changes reduces the forecast RCP4 revenue to $5,896 million.

10.10 Transpower's modelling suggests that the key drivers of increased revenue over RCP4 (excluding the effects of the RAB indexation and the WACC percentile) includes a combination of factors that include: [201]

10.10.1 increased capex and opex requirements over RCP4;

10.10.2 under-recovery of revenue over RCP3;

10.10.3 the expectation of a higher required rate of return on assets over RCP4;

10.10.4 a larger opening RAB at the start of RCP4, with consequential higher depreciation; and

10.10.5 higher cost inflation over RCP4.

10.11 Prior to our analysis of Transpower's revenue path, we issued a section 53ZD request for information notice to Transpower to provide modelling of its smoothed revenue price path.[202] As part of this notice, we requested that Transpower model three different price path smoothing scenarios. Transpower also proposed two of its own scenarios.

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[200] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), page 208.

[201] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), page 209.

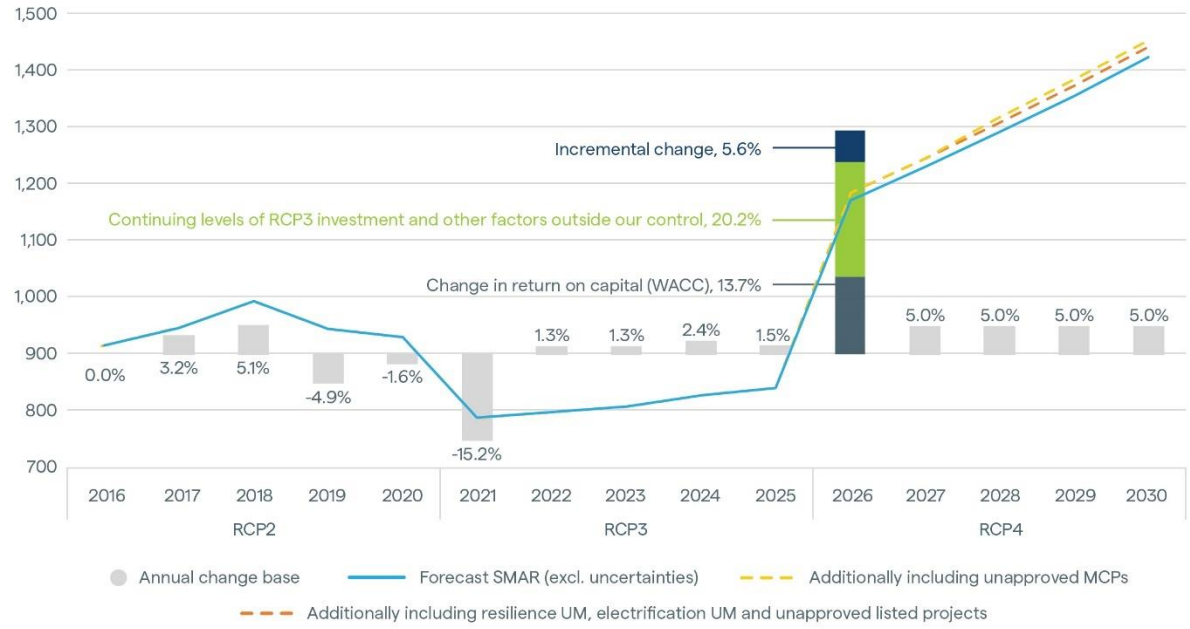
[202] Commerce Commission, "*Notice to supply information to the Commerce Commission under section 53ZD of Act – RCP4 revenue model and forecast revenue calculations*", (04 September 2023).

10.12 Transpower's proposed smoothed revenue path, excluding the effect of RAB indexation and the 65th percentile estimate of WACC, results in a 39.5% step change between the last year of RCP3 and the first year of RCP4 a 5.0% per annum increase to account for the underlying rate of change in the investment profile and inflation.[203, 204]

10.13 Modelling the effect of RAB indexation and 65th percentile estimate of WACC reduces the forecast revenue step change between the end of RCP3 to the beginning of RCP4 to 24.9%, with a 5.0% per annum revenue increase.

10.14 Transpower's proposed smoothed revenue path (not incorporating the 2023 IM Review changes) is illustrated in Figure 10.1. This figure illustrates Transpower's proposed smoothed revenue path and different revenue paths illustrating the potential revenue impact of major capex proposals (**MCPs**) and listed projects that may be commissioned over RCP4, and proposed uncertainty mechanisms (including Transpower's proposed resilience and electrification uncertainty mechanism expenditure).

Figure 10.1 Smoothed revenue forecast 2016-2030, nominal[205]



[203] Transpower New Zealand Limited, "Regulatory control period 4 proposal", (21 November 2023), page 208.
[204] Note this is the forecast revenue based on a smoothing profile with an unindexed RAB and 67th percentile estimate of WACC.
[205] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), page 208, figure 64.

10.15 We will be considering a range of options before we decide on an appropriate revenue profile for Transpower for RCP4. We consider that, given the extent of the revenue increase forecasted for RCP4, there could be benefits if Transpower's total forecast revenues are smoothed for RCP4:

10.15.1 across individual years in RCP4 (intra-period smoothing);

10.15.2 between the last year of RCP3 and the first year of RCP4 (opening inter-period smoothing); and

10.15.3 between the last year of RCP4 and the first year of the subsequent regulatory period (RCP5) (closing inter-period smoothing).

Modelling total forecast revenues and the forecast SMAR

10.16 On 4 September 2023, we issued a notice to Transpower to supply information under section 53ZD of the Act in respect of revenue modelling and forecast revenue calculations for the purpose of setting Transpower's forecast MAR and forecast SMAR.[206]

10.17 In its response to our section 53ZD notice Transpower provided the following revenue scenario information:

10.17.1 **Scenario 1**: calculated estimates of the forecast MAR and forecast SMAR for each pricing year in RCP4, calculating a forecast MAR using forecast values in the forecast MAR building blocks, and calculating a forecast SMAR that demonstrates Transpower's estimated smoothing of the price path based on the forecast MAR estimates for RCP4.

10.17.2 **Scenario 2**: calculated estimates of the forecast SMAR for each pricing year in RCP4 that:

10.17.2.1 uses the price path smoothing approach in Scenario 1;

10.17.2.2 applies the forecast MAR estimates for RCP4 calculated in Scenario 1; and

10.17.2.3 takes into account a form of smoothing of the transition between the forecast SMAR which was set for the final pricing year of RCP3 in the RCP3 IPP, and the estimated forecast SMAR for the first pricing year of RCP4 as calculated in Scenario 1.

[206] Commerce Commission, *Notice to supply information to the Commerce Commission under section 53ZD of the Commerce Act 1986 – RCP4 revenue model and forecast revenue calculations*, 04 September 2023.

10.17.3 **Scenario 3**: a variation of the calculated estimates in Scenario 2 which:

10.17.3.1 uses the price path smoothing approach in Scenario 1;

10.17.3.2 applies the forecast MAR estimates for RCP4 calculated in Scenario 1; and

10.17.3.3 applies a fixed starting price forecast SMAR for the first pricing year of RCP4 that is 15% greater than the forecast SMAR which was set for the final pricing year of RCP3 in the most recently amended RCP3 IPP.

10.18 For Scenarios 1 to 3 above, Transpower provided four variations to each:

10.18.1 **Variation A**: calculated revenue excluding the estimated impacts of RCP4 forecast commissioning of major capex in respect of major capex proposals that Transpower forecasts will be approved after the setting of the RCP4 IPP, and excluding the application of the estimated impacts of the draft IM Review decisions;

10.18.2 **Variation B**: calculated revenue including the estimated impacts of RCP4 forecast commissioning of major capex in respect of major capex proposals that Transpower forecasts will be approved after the setting of the RCP4 IPP, and excluding the application of the estimated impacts of the draft IM Review decisions;

10.18.3 **Variation C**: calculated revenue excluding the estimated impacts of RCP4 forecast commissioning of major capex in respect of major capex proposals that Transpower forecasts will be approved after the setting of the RCP4 IPP, and including the application of the estimated impacts of the draft IM Review decisions; and

10.18.4 **Variation D**: calculated revenue including the estimated impacts of RCP4 forecast commissioning of major capex in respect of major capex proposals that Transpower forecasts will be approved after the setting of the RCP4 IPP, and including the application of the estimated impacts of key draft IM Review decisions.

10.19 For the purposes of Variations C and D, the relevant draft IM Review decisions were:[207]

10.19.1 RAB indexation: apply the draft decision to index Transpower's RAB to inflation from RCP4 onwards, and describe any modelling simplifications used;

10.19.2 Alternative depreciation profile: apply an alternative depreciation approach that Transpower considers appropriate, by applying the draft decision to allow Transpower to request an alternative depreciation approach during the RCP4 reset, and describe any modelling simplifications used;

10.19.3 Base capex and major capex: apply the $30 million base capex threshold, and vary the base capex and major capex assumptions as necessary; and

10.19.4 WACC: use the draft 65th percentile estimates of WACC in place of the 67th percentile estimates.

10.20 In the recently completed IM Review we made three key changes that are relevant to how we might consider Transpower's revenue path in RCP4. These changes include that Transpower's RAB will now be indexed to inflation, the base capex threshold will increase to $30 million, and WACC will be set at the 65th percentile estimate of WACC.

10.21 With these changes in mind, the most relevant scenario appears to be Variation C, with Variation D providing indicative revenue effects of the commissioning of MCPs and listed projects.

10.22 Transpower also proposed its own revenue scenarios, namely:

10.22.1 **TP1**: applies price path smoothing, excludes the 2023 IM Review decisions listed above, and includes Transpower's proposed uncertainty mechanism expenditure and commissioned listed projects over RCP4; and

[207] Note that when we requested Transpower to model the various smoothed revenue scenarios, our IM Review decisions were still only in draft. We have now made our final decisions for the IM Review and will be incorporating those amended input methodologies into our draft decision on the form of the price path in May 2024.

10.22.2 **TP2**: applies price path smoothing, includes the 2023 IM Review decisions listed above, and includes Transpower's proposed uncertainty mechanism expenditure and commissioned listed projects over RCP4,

and its following variations:

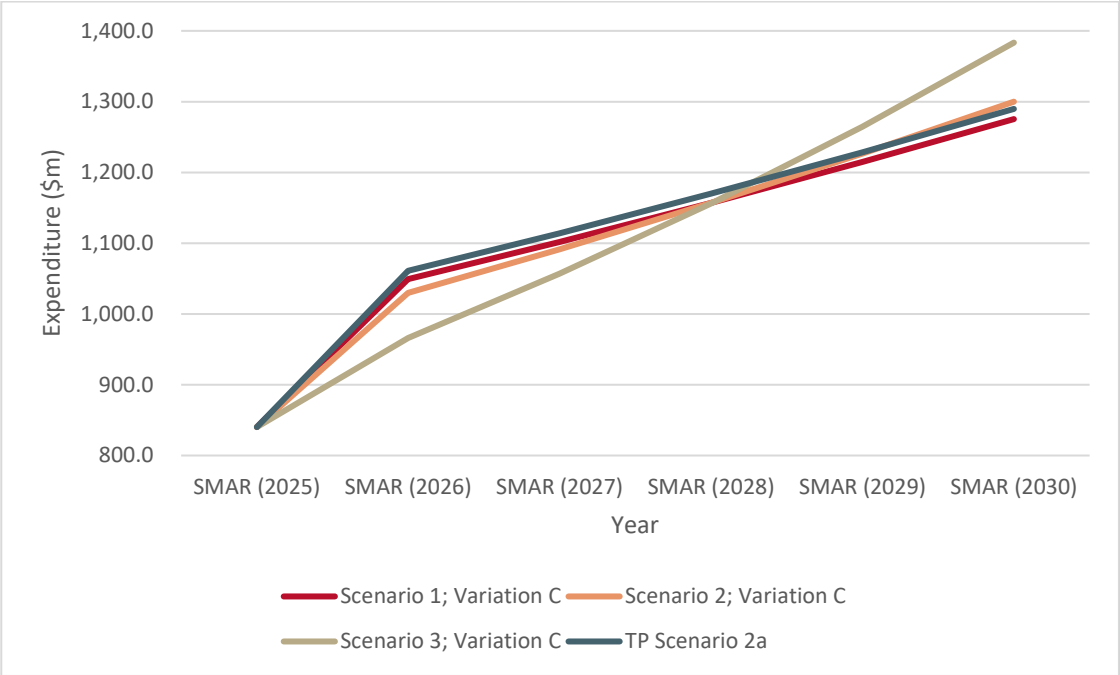
10.22.3 **Variation A** – excludes MCPs and listed projects that may be commissioned over RCP4; and

10.22.4 **Variation B** – includes MCPs and listed projects that may be commissioned over RCP4.

10.23 Figure 10.2 illustrates the revenue profiles of some of the revenue scenarios we sought from Transpower in our section 53ZD notice. These price path smoothing scenarios illustrate in particular the trade-off between the initial step change and the annual rate of change in the price path after the initial step change. For example, Scenario TP2 Variation A demonstrates a higher initial step change and a lower rate of annual revenue increase across RCP4, whereas Scenario 3 shows a lower initial step change and a higher rate of annual revenue increase. This trade-off effect within the regulatory period reflects the NPV neutrality of the price path smoothing within the regulatory period.

10.24 We note that our decisions on the smoothed price path are not necessarily limited to the scenarios that have been modelled for us by Transpower. For example, we could also potentially consider staged initial revenue step changes in years 1 and 2 of RCP4, with a smoothed price path for years 3 to 5 of RCP4. This would essentially be a variation that would fit between Transpower Scenario 2a and our Scenario 3 in Figure 10.2. Whether we proceed to consider further scenarios like this will depend on the feedback we receive from stakeholders, and on our evaluation of the interactions between the draft RCP4 price path and the draft EDB DPP4 price paths.

Figure 10.2 Illustration of smoothing scenarios provided by Transpower in response to our section 53ZD notice



Our preliminary view of the revenue scenarios

10.25 We consider that revenue scenario variations that do not incorporate input methodology changes made following the recently completed 2023 IM Review are no longer relevant.

10.26 We also consider that revenue scenario variations that include the revenue effect of MCPs and listed projects that may be approved and commissioned over RCP4 cannot be factored into the revenue we set in this reset. This is because there is a price path reconsideration provision for MCPs and listed projects in the Transpower input methodologies. Transpower has indicated there are future MCPs and listed projects with proposed forecast commissioning dates towards the end of RCP4. These major projects have yet to be consulted on by Transpower and considered by us.

10.27 As a result of these potential capex approvals, we note that Scenario 3 might be less preferred than Scenario TP2A. This is because the Scenario 3 price path has a steeper growth rate and appears to have a larger step down into the forecasted RCP5 price path. A steeper curve and step into RCP5 could exacerbate price shocks if the expected MCPs and listed projects do end up being approved and commissioned. In comparison Scenario TP2A could leave room to accommodate future capex approvals.

10.28 In our preliminary view the main benefits of Scenarios 1 and 2 are the lower annual revenue growth rate and the projected almost neutral closing inter-period smoothing into RCP5:

10.28.1 Scenario 1, variation C has the lowest annual growth rate of the scenarios, with a reduction in the step change between RCP3 and RCP4 to 24.9%, and an estimated step change between RCP4 and RCP5 of 1.9%;[208, 209] and

10.28.2 Scenario 2, variation C has a more moderate step change of 22.6% transitioning into RCP4, and near neutral transition out of RCP4 (0.01%) compared to Scenarios 1 and 3, with a slightly higher growth rate of 6.0%.

10.29 Our preliminary view is that the variation C options may reduce potential price volatility associated with in-period adjustments for any future MCPs or listed projects that may be commissioned over RCP4. Transpower's initial view is that some proposed MCPs may have forecast commissioning dates in the later years of RCP4 if we approve them.

10.30 As noted above, we may also consider alternative price-path profiles that have more than one step change between RCP3 and RCP4 and within the RCP4 period.

10.31 In making a decision on how we will apply price path smoothing for RCP4, it is necessary to consider the extent of any step changes in the total forecast revenues for RCP4, relative to the total revenues applicable to the last year of RCP3, and relative to the total forecast revenues of the first year of RCP5 (which is difficult to estimate and can be indicative only).

10.32 It is also worth noting that while we will set a SMAR at the start of RCP4, there are likely to be mid-period price path reconsiderations that may result in us reopening and amending the revenue path.

10.33 We have set out a summary of our preliminary views on each of the scenarios we have discussed above and the potential impact of each scenario in Table A1 of Attachment A of this paper.

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[208] Although an increase in transmission charges overall of 24.9% might still be considered more than moderate, we expect this would convert to an average consumer electricity bill effect of approximately 3% or less, which we would not consider to be a price shock at the consumer level.

[209] The 24.9% step change is largely due to external factors such as cost increases and change in WACC, with a small amount reflecting increased investment (see for example Figure 10.1).

10.34 We seek your views on a price path profile you consider to be most appropriate, taking into account possible pricing impacts.

10.35 Without restricting any comments you may wish to make on your preference for a profile for the RCP4 revenue path, we would particularly like your views on the following options for Transpower's forecast revenue increase over RCP4:

10.35.1 your views on whether we should apply a 15% cap on the step change between the last year of RCP3 and the first year of RCP4, with a higher 9.4% annual revenue growth rate across RCP4 (see Scenario 3, variation D);

10.35.2 the revenue transition between the final year of RCP4 and the first year of RCP5;

10.35.3 potentially considering a staged initial revenue step changes in years 1 and 2 of RCP4, with a smoothed price path for years 3 to 5 of RCP4.

10.35.4 which revenue smoothing profile you consider most appropriate; and

10.35.5 If there are any alternative revenue smoothing profiles you consider appropriate, whether you prefer a larger revenue step change and lower annual revenue growth rate, or prefer a lower revenue step change (or changes) with higher annual revenue growth rate.

Implementation of RAB indexation

10.36 Transpower has modelled an unindexed RAB roll-forward consistent with the current input methodologies (i.e., before the RAB indexation amendments under the IM Review), and derived inputs for an indexed RAB roll-forward to use in revenue scenarios for us based on these.

RAB roll-forward of existing assets

10.37 When modelling the change to RAB indexation for existing assets, the approach used by Transpower (which is consistent with the Transpower IM) was:

10.37.1 use the unindexed opening RAB and unindexed depreciation, and an average remaining useful life was calculated. This was then applied to the indexed opening RAB on a straight-line basis to calculate an indexed depreciation amount; and

10.37.2 indexed disposed assets are equal to the same proportion of indexed opening RAB as unindexed disposed assets were of unindexed opening RAB.

RAB roll-forward of new assets

10.38 The roll-forward of new assets was also calculated in accordance with the Transpower IMs.

10.39 The roll-forward of newly commissioned assets was done by depreciation profile in each year. For example, different types of assets have different useful lives (and hence depreciation rates), so each category of new assets has a RAB roll-forward performed.

10.40 A mid-year commissioning assumption was made, so in the first year of an asset being commissioned, only 50% of the depreciation applies.

10.41 Finally, a revaluation is not calculated in the first or last year of commissioning, which is in accordance with the amended input methodologies. Transpower raised this issue with us in its revenue model documentation, as it considers it disconnects the depreciation profile of the revaluation from the depreciation profile of the asset itself.

Application of forecast RAB depreciation

10.42 In documentation supporting its revenue modelling, Transpower identified that its revenue model derives forecast RAB depreciation using an approach that is not fully consistent with the Transpower input methodologies. This is because Transpower derived the forecasted RAB values for existing assets at an aggregate level, rather than an individual asset level.

10.43 PricewaterhouseCoopers undertook a review of the model and noted that while the approach is not fully consistent, Transpower's approach produces an outcome which is "materially equivalent". Transpower also noted it would be forecasting RAB depreciation at an individual asset level for our final price path decisions.

10.44 This is an area we will evaluate further for our draft decisions.

Wash-up for revenue inflation adjustment

10.45 We also identified another RAB indexation implementation issue in the course of the IM Review. We noted that:[210]

[210] Commerce Commission, "*Financing and incentivising efficient expenditure during the energy transition topic paper – Part 4 Input Methodologies Review 2023 – Final decision*", (13 December 2023), paragraph 4.83.4.

> The third finding was that we do not wash-up Transpower's revenue, nor adjust its RAB, for actual inflation. Currently, a partial wash-up is made for actual inflation on opex and capex only, which does not fully compensate Transpower for unexpected inflation.

10.46 In relation to our decision to amend the EDB IMs and GTB IMs to wash-up allowable revenue for the first year of a regulatory period when inflation differs from expected inflation, we noted that:[211]

> As with our draft decision, our final decision to amend the IMs to wash-up allowable revenue for the first year of a regulatory period only applies to the EDB IMs and GTB IMs. As we noted in the draft decision, this has not been an issue for GDBs because we have set their allowable notional revenue for the first year using lagged actual inflation. Likewise, no IM change is needed to provide for this in the case of Transpower as the Transpower IMs would allow us to do so at the reset, if we decide at that point that it would promote the Part 4 purpose.

10.47 This conclusion is based on the fact that the Transpower input methodologies allow us to provide for this as an EV account entry for the purpose of the forecast EV account.[212]

10.48 In our further analysis on this, we will be looking at whether Transpower's revenue should be fully adjusted for actual inflation, and how we can best implement this.

Testing of pricing sensitivity in RCP4

How forecast expenditures for RCP4 might affect energy bills

10.49 As electricity transmission comprises only a part of the electricity supply chain, changes to Transpower's total forecast revenues will not translate directly into corresponding proportionate changes in energy bills for household consumers.[213]

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[211] Commerce Commission, "*Financing and incentivising efficient expenditure during the energy transition topic paper – Part 4 Input Methodologies Review 2023 – Final decision*", (13 December 2023), footnote 481.

[212] Commerce Commission, "*Financing and incentivising efficient expenditure during the energy transition topic paper – Part 4 Input Methodologies Review 2023 – Final decision*", (13 December 2023), footnote 508.

[213] Transpower has consulted with its direct customer connecting parties in the course of preparing its RCP4 proposal. Transpower has made indicative pricing available, to give its direct customers an understanding of any indicative pricing sensitivities. The consultation documents and indicative pricing documents can be found at https://www.transpower.co.nz/our-work/industry/regulation/rcp4/consultation-our-draft-rcp4-proposal and https://www.transpower.co.nz/our-work/industry/regulation/rcp4/our-proposed-five-year-workplan.

10.50 The Electricity Authority estimates that transmission charges make up about 10.5% of a typical household electricity bill, and Transpower estimates that it currently makes up around 8%, rising to 10% before the start of RCP4.[214, 215]

10.51 This means that an immediate total forecast revenue impact of +20% in the first year of RCP4, and a total forecast revenue impact of +5% in subsequent years of RCP4, would translate into an immediate estimated increase in the average electricity bill of about 2%, and a subsequent increase in electricity prices of about 0.5% for a typical household.[216]

10.52 We received submissions to our Process, framework, and approach paper on the extent to which we should consider pricing sensitivities:

10.52.1 MEUG submitted that:[217]

> Given the likely uplift in allowable revenue and prices, we support the smoothing of revenue within a regulatory control period, as well as smoothing across regulatory periods. Any considerable price shocks should be avoided where possible.
>
> [footnotes omitted)

10.52.2 Transpower submitted that:[218]

> We agree with the Commission that affordability is an important consideration for consumers. However avoidance of a price shock does not take precedence over Part 4 objectives. A company operating in a workability competitive market would not be able to delay, over a long period, passing through material increases in input costs.
>
> We also note, a large part of the step change from RCP3 to RCP4 is driven by the Commission's regulatory settings i.e. rate of return fixed for the control period, the catch-up for the difference between outturn and forecast inflation, and the operation of Transpower's EV account. Further delaying the pass-through of these costs may mean placing a greater revenue recovery burden on future consumers.

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[214] See https://www.ea.govt.nz/your-power/bill/

[215] Transpower New Zealand Limited, "*Regulatory control period 4 proposal April 2025 – March 2030*", (21 November 2023), page 9.

[216] This is an indicative analysis and assumes that Transpower's customers pass these costs on fully to household consumers, and if the revenue increases were to be evenly distributed across Transpower's customers.

[217] Major Electricity Users' Group, "*Submission on Transpower's IPP 2025 – Process, Decision-making framework, and Approach*", (16 November 2023), paragraph 6.

[218] Transpower, "*Submission on Transpower's IPP 2025 – Process, Decision-making framework, and Approach*", (16 November 2023), page 2.

10.53 While our focus will be on the pricing impacts to direct customers of Transpower's electricity transmission services, we are mindful of consumer price shock effects. We will consider whether the potential revenue step change results in a price shock from RCP3 into RCP4, in conjunction with the revenue impacts of our decisions on EDB DPP4.

10.56 Transpower has released indicative transmission pricing based on its RCP4 proposal.[219] This indicative transmission pricing was based on indexed RAB, a 65th percentile estimate of WACC, and the smoothing profile set out in Scenario 1, variation C.[220]

10.54 We invite your views on whether Transpower's proposal could give rise to price shocks for consumers and how this could be appropriately managed in promoting the Part 4 purpose. Without limiting your submission, this could include reference to our concurrent EDB DPP4 process.

10.55 We would also like your feedback on whether you need any additional relevant information when considering any potential price shocks in conjunction with our concurrent EDB DPP4 process.

Length of regulatory control period

10.57 In our Process, framework, and approach paper, we noted that:[221]

> The process of setting the RCP4 price path spans an 18-month period until the final decision is made by November 2024. RCP4 will commence on 1 April 2025 and unless we decide that a shorter period (a minimum of 4 years) would better meet the Part 4 purpose, then the default regulatory period will be five years.

10.58 Transpower submitted that:[222]

> In our view any decision to reduce the regulatory period should be made prior to the start of the Transpower's submission proposal process, as the length of the regulatory period dictates investment and operational decisions (including accounting for the expenditure incentives). Our proposal is focused on a five-year period, and our expenditure plans and proposed initiatives reflect this.

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[219] See https://www.transpower.co.nz/our-work/industry/regulation/rcp4/our-proposed-five-year-workplan.

[220] The process and assumptions are set out in Transpower's "RCP4 Indicative Transmission Charges – Indexed RAB" worksheet, available at https://www.transpower.co.nz/our-work/industry/regulation/rcp4/our-proposed-five-year-workplan.

[221] Commerce Commission, "*Transpower's individual price-quality path for 2025 to 2030: Our process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path*", (9 October 2023).

[222] Transpower New Zealand Limited, "Submission on Transpower's individual price-quality path for 2025 to 2030: Process, decision-making framework, and approach for setting expenditure allowances, quality standards and the price path", (16 November 2023), pages 1 and 2.

A shorter control period would also create consequential effects on both Transpower and Commission processes and their timing, such as the E&D reopener, listed project application, and ability to respond to any specific investigation query under a s53ZD notice. In addition, the decision would mean the control period ended March 2029 and leave an overhang period under the order-in-council (which expires September 2030) that provides for Transpower's IPP.

10.59 Our preliminary view is that we do not currently have reasons to cause us to consider a shorter regulatory control period than the default five-year period in accordance with sections 53M(4) and (5) of the Act.

10.60	We invite further submissions on your views on the length of the regulatory control period.

Attachment A Preliminary assessment of Transpower's revenue path smoothing

Table A1 Our preliminary assessment of different revenue path scenarios

Price-path scenarios	Description of scenario	Impact	Assessment
Scenario 1, Variation A	Apply smoothing to the price-path applicable to RCP4 with no IM changes (unindexed RAB and 67th percentile estimate of WACC) and excluding unapproved MCPs and Transpower's proposed uncertainty mechanisms	• Step change of 39.5% between last pricing year of RCP3 and first pricing year of RCP4 • Growth rate of 5.0% • Total SMAR of $7314.7 million • Step change of -1.6% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*
Scenario 1, Variation B	Apply smoothing to the price-path applicable to RCP4 with no IM changes (unindexed RAB and 67th percentile estimate of WACC) and including unapproved MCPs but excluding Transpower's proposed uncertainty mechanisms	• Step change of 39.5% between last pricing year of RCP3 and first pricing year of RCP4 • Growth rate of 5.0% • Total SMAR of $7,349.5 million • Step change of -0.5% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*

Scenario 1, Variation C	Apply smoothing to the price-path applicable to RCP4 with IM changes (indexed RAB and 65th percentile estimate of WACC) and excluding unapproved MCPs and Transpower's proposed uncertainty mechanisms	• Step change of 24.9% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 5.0% • Total SMAR of $6,637.8M • Step change of 1.9% between last pricing year of RCP4 and first pricing year of RCP5	It provides a moderate intra-period growth rate and a minor step change into RCP5. A more moderate approach is preferable, as future MCPs and listed projects have proposed forecast commissioning dates in the later parts of RCP4. The approach under this scenario should lessen price shocks when new large projects are commissioned.
Scenario 1, Variation D	Apply smoothing to the price-path applicable to RCP4 with IM changes and including unapproved MCPs but excluding Transpower's proposed uncertainty mechanisms	• Step change of 24.9% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 5.0% • Total SMAR of $6,666.0M • Step change of 2.8% between last pricing year of RCP4 and first pricing year of RCP5	While this variation gives an idea of the possible effects of unapproved additional capex, we do not propose to include unapproved capex in the initial price path setting as there is a price path reconsideration provision for MCPs and listed projects in the Transpower input methodologies and we do not consider it appropriate to profile them into the revenue path at this stage.
Scenario 2, Variation A	Apply a form of smoothing to the price-path in RCP4 and also apply a form of smoothing of the transition between the forecast SMAR for the final pricing year of RCP3 and the final pricing year of RCP4. Excludes IM changes (unindexed RAB and 67th percentile estimate of WACC), unapproved MCPs, and Transpower's proposed uncertainty mechanisms	• Step change of 36.9% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 6.0% • Total SMAR of $7,322.4M • Step change of -3.5% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*

Scenario 2, Variation B	Apply a form of smoothing to the price-path in RCP4 and also apply a form of smoothing of the transition between the forecast SMAR for the final pricing year of RCP3 and the final pricing year of RCP4. Excludes IM changes (unindexed RAB and 67th percentile estimate of WACC) and Transpower's proposed uncertainty mechanisms but includes unapproved MCPs	• Step change of 36.9% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 6.0% • Total SMAR of $7,357.2M • Step change of -2.4% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*
Scenario 2, Variation C	Apply a form of smoothing to the price-path in RCP4 and also apply a form of smoothing of the transition between the forecast SMAR for the final pricing year of RCP3 and the final pricing year of RCP4. Includes IM changes (unindexed RAB and 67th percentile estimate of WACC) but excludes Transpower's proposed uncertainty mechanisms and unapproved MCPs	• Step change of 22.6% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 6.0% • Total SMAR of $6,644.7M • Step change of 0.01% between last pricing year of RCP4 and first pricing year of RCP5	This variation has a more moderate step change transitioning into RCP4 and near neutral transition out of RCP4 compared to Scenarios 1 and 3, with a slightly higher growth rate. We may need to investigate this scenario further to determine whether the inter-period smoothing should have a greater effect.

Scenario 2, Variation D	Apply a form of smoothing to the price-path in RCP4 and also apply a form of smoothing of the transition between the forecast SMAR for the final pricing year of RCP3 and the final pricing year of RCP4. Includes IM changes (unindexed RAB and 67th percentile estimate of WACC) and unapproved MCPs but excludes Transpower's proposed uncertainty mechanisms	• Step change of 22.6% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 6.0% • Total SMAR of $6,672.8M • Step change of 1.6% between last pricing year of RCP4 and first pricing year of RCP5	While this variation gives an idea of the possible effects of unapproved additional capex, we do not propose to include unapproved capex in the initial price path setting as there is a price path reconsideration provision for MCPs and listed projects in the Transpower input methodologies and we do not consider it appropriate to profile them into the revenue path at this stage.
Scenario 3, Variation A	Forecast MAR and applies estimated smoothing to the price-path and applies a fixed starting price forecast SMAR for the first pricing year of RCP4 that is 15% greater than the forecast SMAR which was set for the final pricing year of RCP3. This excludes IM changes and unapproved MCPs.	• Step change of 15.0% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 15.28% • Total SMAR of $7,390.4M • Step change of -17.9% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*
Scenario 3, Variation B	Forecast MAR and applies estimated smoothing to the price-path and applies a fixed starting price forecast SMAR for the first pricing year of RCP4 that is 15% greater than the forecast SMAR which was set for the final pricing year of RCP3. This excludes IM changes but includes unapproved MCPs.	• Step change of 15.0% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 15.28% • Total SMAR of $7,425.4M • Step change of -16.9% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*

Scenario 3, Variation C	Forecast MAR and applies estimated smoothing to the price-path and applies a fixed starting price forecast SMAR for the first pricing year of RCP4 that is 15% greater than the forecast SMAR which was set for the final pricing year of RCP3. This includes IM changes but excludes unapproved MCPs.	• Step change of 15.0% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 9.39% • Total SMAR of $6,667.4M • Step change of -6.0% between last pricing year of RCP4 and first pricing year of RCP5	This variation provides the smallest step change into RCP4, which may reduce some of the price volatility between RCP3 and RCP4. However, this has a steeper growth rate and a larger step down into RCP5. As we have noted, there are future MCPs and listed projects with proposed forecast commissioning dates towards the end of RCP4. A steeper curve and step into RCP5 may exacerbate price shocks if the MCPs and listed projects are commissioned.
Scenario 3, Variation D	Forecast MAR and applies estimated smoothing to the price-path and applies a fixed starting price forecast SMAR for the first pricing year of RCP4 that is 15% greater than the forecast SMAR which was set for the final pricing year of RCP3. This includes IM changes and unapproved MCPs.	• Step change of 15.0% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 9.39% • Total SMAR of $6,695.6M • Step change of -5.2% between last pricing year of RCP4 and first pricing year of RCP5	While this variation gives an idea of the possible effects of unapproved additional capex, we do not propose to include unapproved capex in the initial price path setting as there is a price path reconsideration provision for MCPs and listed projects in the Transpower input methodologies and we do not consider it appropriate to profile them into the revenue path at this stage.

Transpower Scenario 1A	Smoothed price path scenario proposed with unindexed RAB, 67th percentile estimate of WACC, excluding unapproved MCPs and including Transpower's proposed uncertainty mechanisms	• Step change of 41.2% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 5.0% • Total SMAR of $7,397.4M • Step change of 2.6% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*
Transpower Scenario 1B	Smoothed price path scenario proposed with unindexed RAB, 67th percentile estimate of WACC, including unapproved MCPs and including Transpower's proposed uncertainty mechanisms	• Step change of 41.2% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 5.0% • Total SMAR of $7,432.2M • Step change of 3.7% between last pricing year of RCP4 and first pricing year of RCP5	*This variation does not include our latest IM Review decisions, so it is not applicable.*
Transpower Scenario 2A	Scenario proposed with indexed RAB, 65th percentile estimate of WACC, excluding unapproved MCPs and including Transpower's proposed uncertainty mechanisms	• Step change of 26.3% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 5.0% • Total SMAR of $6,703.2M • Step change of 5.6% between last pricing year of RCP4 and first pricing year of RCP5	Is a variation of Scenario 1. While this variation provides the same growth rate to Scenario 1, it has larger step changes in transition to RCP4 and to RCP5. This results in slightly larger step changes between the RCPs compared to Scenario 1. It also includes the proposed uncertainty mechanisms which we are further investigating. At this stage this option is dependent on our further investigation of uncertainty mechanisms.

Transpower Scenario 2B	Scenario proposed with indexed RAB, 65th percentile estimate of WACC, including unapproved MCPs and including Transpower's proposed uncertainty mechanisms	• Step change of 26.3% between last pricing year of RCP3 and first pricing year of RCP4 • Annual growth rate of 5.0% • Total SMAR of $6,731.4M • Step change of 6.5% between last pricing year of RCP4 and first pricing year of RCP5	While this variation gives an idea of the possible effects of unapproved additional capex, we do not propose to include unapproved capex in the initial price path setting as there is a price path reconsideration provision for MCPs and listed projects in the Transpower input methodologies and we do not consider it appropriate to profile them into the revenue path at this stage.